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### Abstract

The contemporary clothing industry is one of the world's biggest polluters. This paper is a study conducted by an experienced fashion practitioner with the goal to test a hypothesis about a sustainable fashion practice through constructive design research. The question posed by this work is how feasible is it to make attractive clothes based on drawings by children, and by virtue of this, create additional value and provide increased emotional attachment between the creator, her family and the product. The primary goal is to produce high quality and emotionally valuable, therefore durable clothes, reducing fabric waste in the fashion industry on the levels of both pre- and post-consumer. To support the production and hypothesis, contemporary trends in society, art and fashion were studied by preliminary theoretical research. A group of research participants, consisting of six international families with daughters of pre-school and school age, were recruited. Zero waste clothes co-created with the children's drawings were produced for these families. For the applied research, appropriate clothing production techniques were tested, and the roles of designer and user in the proposed working model were discussed. After a six-month period of wearing the co-created pieces, the adult participants reported that they valued these items because they were made using their children's drawings, in addition to their physical and aesthetic qualities, emphasizing that they will save these items for future generations.

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**Keywords** co-creation, emotional attachment, zero waste fashion, children art, patterns

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100% LOVE 0% WASTE

# **READY-TO-PAINT:**

CO-CREATION WITH LITTLE ARTISTS  
IN FASHION PRACTICE

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Fashion and Clothing Design

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# ABSTRACT

Modern clothing industry is one of the world's biggest polluters. This work is a study conducted by skilful fashion practitioner who tests the hypothesis for one sustainable fashion practice through constructive design research. The question posed by this work is how feasible is the idea to make good-looking clothes that is co-created with children drawings, and by virtue of it co-create additional value, provide higher emotional attachment between co-creator, her family and the product. The primary goal is to produce valuable and therefore durable clothes, reducing fabric waste in fashion industry in different levels: pre-consumer and post-consumer. The group of research participants consisting of 6 international families with daughters of pre-school and school aged were recruited. Zero-waste clothes co-created with children participants' drawings were produced for these families. To support the production part and hypothesis modern trends in society, art and fashion were covered by preliminary theoretical research. Along the applied research part appropriate clothing production techniques were tested and described, and roles of designer and user in the proposed working model were discussed. After a six-month period of owning the co-created pieces adult participants reported that they value these items because it was made with their children drawings, in addition to its physical and aesthetic qualities, emphasizing that they will save these items for the future generations.

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# INTRODUCTION

English contemporary musician, composer and visual artist, Brian Eno, once said:

***"Stop thinking about art works as objects and start thinking about them as triggers for experiences"***

(Roy Ascott's in Eno, 1996: 369).

It turned out that Eno used the artist Roy Ascott's original phrase to express his feelings on the development of the contemporary art scene. It is a phrase that has fascinated me ever since I first read it and became the red line of this thesis. I wondered what positive changes could happen if we implemented the same logic with the items of clothing: stop thinking about clothing as objects and start thinking about them as triggers for experiences. In addition, when I concentrated my work on art by children, usually seen more like scribbles on paper, I continue to ask: what if we stop thinking about children's art as objects and start thinking about it as triggers for experiences? These questions triggered the following theoretical research, along with constructive design research, or stated simply, the applied research of the thesis.

First, I want to consider why we need to find new solutions for the fashion industry and what are the crucial points I personally aim to address in my design practice.

Every year, more than 80 billion articles of clothing are produced around the world. Consequently, every year, billions of used articles of clothing are thrown away to make room for new ones. This is an unfortunate waste of valuable resources and a fact that worries many professionals in fashion industry.

For instance, on average, every American throws out about 82 pounds of textile waste per year. That's 11 million tons of waste produced every year in the United States alone. (Planet Aid, 2016.) American and European excessive consumption habits influence the environment of the countries where production is located (Ninimäki, 2013:14). The discarded textiles are likely to then end up in landfills, where they pile up to produce toxic greenhouse gasses that are emitted into the atmosphere. In addition, clothes can take up to 40 years to decompose. While some materials take longer to decompose than others, all have harmful effects for the environment. In addition to releasing gases like methane, most fabrics are made with dyes and chemicals that can contaminate the soil and ground water. (Planet Aid, 2016.)

Fashion studies draw our attention that there are two broad categories of textile waste that should be investigated: waste created by fashion industry and waste created by consumers. Waste created by industry is usually called pre-consumer textile waste—created during manufacture of fibre, yarn, fabric, and garments. (Rissanen & McQuillan, 2016: 10.) For instance, the amount of fabric that is wasted when garments are cut before entering the assembly line is on average 15 percent. The estimated amount of fabric produced globally in the apparel industry in 2015: 400 billion square meters. Doing the math, 15 percent of 400 billion

square meters equals 60 billion square meters (Gugnani & Mishra, 2012 in Rissanen & McQuillan, 2016: 10), that eventually goes to the landfill if not recycled by manufacturer.

The waste that is created by consumer is called post-consumer textile waste and comprises garments and household textiles thrown away after they've been used by the consumer (Rissanen & McQuillan, 2016: 10).

Hence, it is believed that "the clothing industry is the second largest polluter in the world, second only to oil." This was said out loud by Eileen Fisher, an American clothing designer (Eco Watch, 2015); nowadays, this opinion is widely shared. However, the fashion industry is complicated and involves long continuous and varied supply chains that include raw materials and textile manufacture, garment production, shipping, retail, use, and garments' disposal. For these reasons Fisher's assessment can be challenging to verify, however, what is certain is that the carbon footprint of fashion is enormous. To determine the exact carbon footprint of fashion industry can be a challenge due to the variety of production processes. If a general assessment is performed, it should take into account not only obvious pollutants like for example the toxic dyes used in manufacturing and the great amount of waste, but also the amount of natural resources used in extraction, farming, harvesting, processing, manufacturing and shipping, as well as post-consumer waste in form of discarded textiles. (Eco Watch, 2015.)

People throw away, recycle or donate their clothes all over the world, but by my observation, not the clothes they are attached to. Clothing that has meaning to the owner builds an emotional attachment that prevents it from being thrown away and ending its lifecycle in landfill. This thesis explores a practical way of bringing an emotional attachment to the experience of owning clothes





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i1. Public event by Value Village Thrift Store organisation to raise awareness on fashion industry problems. The one day art installation was made with clothes that were donated to Value Village and saved from landfill. August 17, 2016, Vancouver, BC, Canada .

through a co-creation experience. It aims not only to the adult consumer but also to a younger audience, as they are that next generation, about whom we are talking when speaking of sustainability and meeting the needs of future generations.

In general, the contemporary fashion industry can provide consumers with any kind of clothes at any level of pricing, styling etc., but the problem in which I'm particularly interested in with my work is the short lifecycle of clothing, a use cycle that often has no personal connection, no emotional attachment to clothes that were purchased, and a lack of satisfaction that leads to fast disposal, scaling up the problem of over-consumption and pollution. Nowadays, efficient mass manufacturing that takes place in lower cost countries significantly speeds up the production of garments at low end-prices. Consequently, low prices lead consumers all over the world are getting used to impulsive shopping due to suggested low prices, especially on the sales seasons. This leads to unsustainable practices such as overconsumption, shortening of use time of purchased garments, and eventually the disposal of the product that is still in perfect condition. The same extremely effective mass manufacturing made fashion markets overflowed by constant supply of new fashion items and never sold clothing. (Niinimäki, 2013: 14.)

The problem starts even earlier because not only does the clothing not find its end user, but fabrics produced and packed in rolls end up being unsold and continuously discounted until discarded, or in some cases donated (image 2-4).

Additionally, not all new garments, as well as fabrics, even have a chance to be purchased; some go to landfill or donation facilities directly from the factory because it does not comply with the quality or design standards. Furthermore, there are garments that become post-consumer waste that are even never was worn by



i2. Fabric shops have much in common with fast fashion shops: oversaturation, constant discounts and plenty of unsold items.

consumer due to enormous amount of offerings from the contemporary market. There is no exact number for these never sold fashion garments, but it is estimated to be five to ten percent of worldwide fashion market. (Niinimäki, 2013: 14.) The same is true with fabric produced for further use by fashion brands, designers and public, the market for textiles is full of items that seem to never be sold. It is obvious that all the natural, production, people resources are simply wasted if the fabric or garment never reaches the end-user.

Moreover, industrially-produced garments are often depersonalized by the speed and volume of contemporary production. Therefore, consumers no longer informed on details such as who are the makers, or what is the source of the material; that often makes purchased garments inanimate objects in the people's wardrobes. (Fletcher and Grose, 2012: 85.) Contemporary sustainable fashion researchers Fletcher and Grose emphasize that "the limited presence of meaning and empathy in so many commodity fashion products, combined with their low cost and ease of purchase, is a key factor in their being discarded long before they are worn out."





i3, i4. Rolls of fabric with various outdated print patterns are piled up in the fabric shops around the world. Pictures were taken in Fashion district, Los Angeles, CA, USA, where multiple streets are filled with similar fabric shops. Nowadays, in almost every large city such shops or even streets can be found.

They stress the fact that recent studies show that “90 percent of clothing is thrown away long before the end of its useful life”; and that, often, a discarded product is not an indicator of poor quality, but rather of a failed relationship between the product and the user. (2012: 85.) It is believed that significant change comes when durability is understood in terms of emotional and cultural indices—what meaning the garment carries, how it is used, and the behaviour, lifestyle, desires and personal values of the end-user. Building empathy can be a long term process, it can evolve through time. (2012: 85-86.)

In my work I aim to face the challenge and evoke empathy in the early stages, and research the opportunities for co-creation with the end-user or their loved ones in order to influence the durability of the product by building emotional attachment and empathy towards the product, starting the moment the visual image of the product is created. This empathy and the value of produced garments, I believe, might grow over time. Fletcher and Grose suggest that multiple approaches to ensuring the longer durability of clothing exist nowadays; one possibility lies in thinking beyond

existing frameworks by creating ‘future scenarios’, in which explorations are pushed as far as possible to gain insights into what might happen further in the future (2012: 88). In the same way, the group of research participants recruited by me were observed during the scope and timeline of this thesis, but they were asked to imagine possible future scenarios for their relationships with the co-created garments.

I don’t assume that all garments in a person’s wardrobe has the potential to be meaningful. However, if some items have meaning from the very beginning and are made responsibly and ethically, such a garment could make an example, thus making its owner question their other garments and their future purchases, therefore its impact can be significant. I challenged myself throughout the timeline of the thesis to ask how to create such meaningful garments for the six families who became my research participants.

This thesis aims to address the categories of waste in both prevailing design and production practices. In order to reach the point of no pre-consumer textile waste, the techniques of zero waste fashion design were implemented.

Indeed, zero waste fashion design refers to fashion design that wastes no fabric, by integrating pattern cutting into the design process. A broader definition of zero waste fashion design includes “garment disposal strategies as a design consideration” (Rissanen and McQuillan, 2016: 10). Similarly, the act of enhancing the emotional value of produced garments to create a personal attachment to clothing items, and therefore increasing its durability or lifespan, can be another means of holistic approach to zero waste fashion. This thesis is primarily concerned to explore this issue.

The hypothesis I test in my work is: can there be a working model through which clothes are co-created to incorporate art that is valuable to consumer, while being fashionable, good-looking and made ethically. Can this model be one of the solutions to the problem of contemporary society’s unsustainable approach to fashion? I named this test model or brand - Ready-to-paint, and narrowed my focus down to art made by children and their families in particular, because I believe that this type of art is visually appealing and in some cases, can be compared to contemporary art (visually), therefore it can be used for creating fashion prints. In addition, art made by children is valued by families, often preserved for the future, and consequently, using such artworks for clothing design can add the value to clothes itself. Moreover, children are the future generation whose needs we address in sustainable development. Therefore, the outcome of this work can also influence the perception by children of their abilities and build positive future consumer habits.

By testing my hypothesis, I faced the challenge that narrow or single strand approaches are not enough for building the prototype of a sustainable fashion brand. The mentioned fashion industry problems exist on multiple levels and throughout the lifecycles of the product, therefore it is better to design life cycles instead of products and implement use phase and end-of-life thinking, along with design and production phases. (Niinimäki, 2013: 17.) Nowadays, sustainable design and business strategies include ethical and value-based thinking. Finnish sustainable fashion researcher, Kirsi Niinimäki, believes new kinds of relationships with the customer may create new kinds of value in the business, open up a conversation with the end-user, help to understand the customer’s needs and challenge the customer’s consumption patterns. Likewise, this dialogue can be an important stream for company to communicate its values and decisions, educate the consumer and establish connection and trust. Such satisfaction approach enables to bring value not only to the brand and the user but to the environment as well due to the prolongation of the use phase and decreasing the amount of purchased clothing and discarded items. (Niinimäki, 2015:130.) I deeply agree and have strived to implement this approach within my fashion practice.

Nowadays, a designer’s role has changed, with the mentioned changes in approach. Zero waste researcher and practitioner Timo Rissanen remarks that new ways of thinking about industry’s existence and functioning, while allowing humanity to flourish are needed. “This points towards a new, expanded vision for fashion design: as well as designing and making garments, fashion design needs to design the consumption, wearing and using of garments, and design, collaboratively with other fields, the systems in which the wearing and using occurs. All of these require examination through a lens of beauty.”(Rissanen, 2013: 159-161.) In this thesis, I

examine through my own practice and applied research what kind of roles and responsibilities contemporary designer who wants to be a part of sustainable fashion movement, is facing.

Niinimäki cites in her work the principles of environmental design defined by the European Commission.

First, the designer and producer should prefer low-impact materials and processes whenever it is possible. In the production of my thesis, this principle was implemented by looking for available solutions in textiles and printing methods. Secondly, it is suggested to focus on resource efficiency and develop or use processes that consume less natural resources. To address this issue, I chose to produce locally in collaboration with local digital printing company. The third principle is to invest in high quality and durable materials. This I see is the one of a primary roles of the designer: to create high quality and durable garments that are, as mentioned before, durable not only in physical but emotional terms as well. And lastly, it is advised to design lifecycle for the products where garments could be reused, recycled or composted. This approach of envisioning future scenarios for the clothes we design and produce is also covered in this work. Best case scenario if the product is designed for more than one life cycle. (SEC 2009: 21 in Niinimäki, 2013: 17.)

Similarly, Rissanen points out, and I agree, that

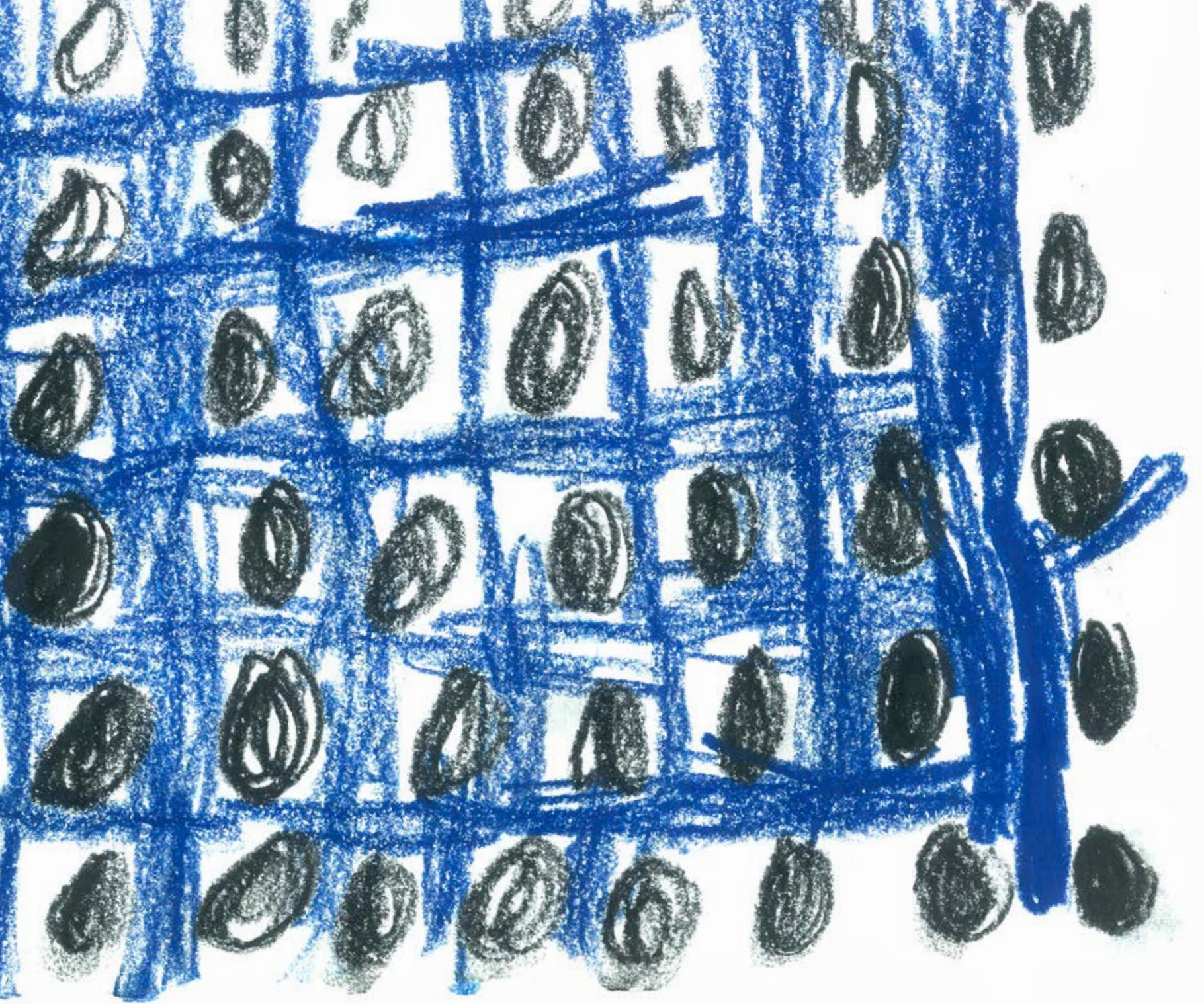
*“our common goal should be to make “sustainable fashion” a redundant term, by working towards fashion that sustains and is beautiful.*

This is possible by working towards not only more sustaining design practices and supply chains, but by adopting a more holistic approach that includes the cultural and economic systems within which garments are worn and used” (2013: 161).

In my opinion, the physical and aesthetic qualities of the garment, the way it is produced, and most importantly the relationship of the end-user with each one are the core aspects that I as a designer need to face to create a sustainable fashion approach at least for one brand. The initial goal is to satisfy the consumer; however, the higher but reachable goal is to educate and inspire the consumer, and most importantly future generations of consumers, by involving them at some point in the creation process, by bringing value to their product-consumer relationship, and by communicating the sustainable approach to manufacturing processes undertaken by the brand.

To conclude, if only we stop thinking about our clothes as mere objects and start seeing them as triggers for positive experiences and the basis for creating valuable memories, this could transform the experience of owning pieces of clothing into a unique emotional experience, and consequently helping to make the fashion industry more sustainable.







# CHAPTER 0

# ABOUT

Below, I recount matters of my personal professional development as a designer that informed the most significant aspects of this thesis project, such as: zero waste pattern cutting and zero waste production; print pattern development skills; extending the life-cycle of textiles and clothes; emotions and empathy as an aspect of the design process and product-user relationship; meaningful messages that clothes can embody; as well as working process with children and the art they make.

Then, the matters of the current work is discussed. The goal of this applied research is presented, followed by discussion on questions posed throughout the work and detailed description of research methods used in the process of this thesis.

Furthermore, the process of this thesis work is described shortly. The chapter is concluded by outline of the following text.

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## 1 PERSONAL STORY

Chronologically speaking, my first encounter with zero waste and recycling production, or to more accurately name it upcycling, happened while developing my first student collection in Kosygin Moscow State Textile University in 2006 (Russia). During that time in the Russian fashion scene, recycling or upcycling, as well as zero waste production cases, were met not often or at all. Therefore, we (I and my fellow classmate with whom I collaborated) saw ourselves as pioneers developing outfits using zero waste square cuts, upcycling textile scraps into new textiles for our outfits, repurposing old jackets into new pieces of clothes, and using such unconventional materials as building rope and art canvases. The collection's success, and my overall experience with its development, geared up my interest in working further with zero waste methods, unconventional materials and recycling practices. In the images five to ten some examples are presented from following collections and the above mentioned one as well.

An invitation to do internship at the Traditional Russian Costume Museum (Moscow, Russia) at the same University was my next experience with zero waste cutting methods. Here, I was designated to restore some of the old pieces of traditional folk clothes. Most of the pieces I had access to were made with zero waste pattern cut technique. Consequently, my understanding of such cutting method deepened, as well as an awareness of motives that stood behind the choice to value fabric and not waste an inch. From every piece, one can get a feeling of how precious fabric was at

**i5, i6.** Two looks from collection "The Queen of Clochards", 2006.

Textile scraps, old jackets, art canvas, and ropes are the main materials of this upcycling collection.

**i7, i9.** Two looks from collection "Nomads", 2011. Garments made with zero waste pattern cut method.

**i8, i10.** Zero waste experimental collection "Fishes in the Clouds", 2006.





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that time (19th – 20th centuries), and how deeply loved and valued the end result was by its owner or line of owners. In addition, during my analysis of design and pattern, it became obvious how some pieces of fabric were woven with specific width in mind to become, later on, valuable items of traditional costume; or how less important pieces were cut from widely used canvas material, similar types with no waste. Later on, through studying national costumes of other countries, I learned that there are similarities in cutting methods and personal attachment that reaches across centuries, countries and continents. In fact, zero waste traditional clothes that have noticeable likenesses in design, cut and philosophy can be dated between the 13th to early 20th century or even 5th to 6th century and in such countries as Egypt, Ukraine, Canada, Greece, Italy, England, America, Spain, France, Moldavia, Palestine, Taiwan, Japan, Afghanistan, Korea and others (Burnham, 1911).

Third and the most significant the time I studied zero waste was during the Zero Waste Pattern Cutting Workshop (2012) with Holly McQuillan (in Helsinki, Finland). Her teaching on her own methods and introduction to the world of such practices inspired my willingness to continue my work with the technically difficult but rewarding zero waste cutting methods and the belief that such practices are a part of a bigger sustainable development path for the fashion industry. Besides, during that workshop I had a chance to listen such bright teachers and researchers in the field of sustainable fashion as Timo Rissanen and Kirsi Niinimäki, whom I sight in this work notably. My feedback on that summer course speaks for itself: “To aim at zero waste is the first responsible step after buying a piece of fabric to make a garment” (ZWPC workshop, 2012). During that workshop, I made several zero waste prototypes, and one has direct relevance to this thesis. I developed a prototype, that was supposed to be first in a series (I still hope to

continue with this artistic endeavour of mine one day) and called it “Ready to”, and described it as such: “I connect the processes of art and slow fashion; I use around one meter of fabric and print it spontaneously by hand recycling leftovers of printing inks; then I cut and sew it using zero waste pattern cut method; the pattern itself and print is inspired by an artwork.” I concluded back then: “This is my way for intuitive art making with a risk of an unknown result, but at the same time with higher level of responsibility in my field of work.” (ZWPC workshop, 2012).



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The reader will easily notice the similarities of that project and this thesis, although the thesis involves less spontaneity and more preliminary and emphatic design research, with both projects, wearable art pieces became well designed wearable clothes, inspiration from an art work becoming co-creation with real children’s art to achieve purposes of emotional attachment; in addition to that, my zero waste pattern cutting technique transformed from intuitive to well thought out, researched and designed to be



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suitable for the broader population. Nevertheless, the roots can be considered to be from one tree and one can say that the series "Ready to" is continuing with the dresses and other pieces from this thesis production.

To continue to other matters of this thesis and its connection to my past experience, the next subject I cover is emphatic design and my work experience as a costume designer. Before moving to Helsinki to study at AALTO and being introduced to the terms of emphatic design and its methodology, I was designing costumes for the circus, theatre and dance performances for several years, and without knowing it, used emphatic design principles in my work. Every project started with observation of artists and director during rehearsal, capturing the essential idea and philosophy of future acts, noticing restrictions and requirements for the particular body movements. Then with the director and technicians, we would reflect and analyze on what options of visual image and practical form we can suggest. Continuing further, I would develop a series of sketches and some prototypes of various solutions and then the director, artist and I choose the best suitable idea, that would reflect philosophy of the story, that would suit the artist and wouldn't restrict any movements, and that would be a visually attractive and a clever product of design work. Only after, during short course on Empathic Design with Kirsi Niinimäki in AALTO, I realized that I was working with these principles a long time ago. Besides the experience gained in an unexpected field, this period and the multiple things created through it, taught me the importance of creating not only beautiful pieces of clothes or technical apparel, but wearable design that brings emotions to the viewer, has visual and inner meaning and tells a story thus is a part of a story itself.

**i11-13.** Zero waste garment created during workshop with Holy McQuillan at AALTO University, Helsinki, Finland, 2012.

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**i14-15.** Zero waste garments created for various circus acts using empathic design approach.

**i16-18.** (page on the right) Thesis collection “DeForms”, 2011.

The theme of the message embodied in the clothes we wear fascinated me for a long time. My first thesis was about separating the clothes from the body while one is still wearing it, deforming it and misplacing it. In other words, the question I posed was: what would be the message of the clothes that are separated from the body but still worn by it? If we take away attachment to the clothes we wear, what is left? It was an open question and my thesis answered it only in an artistic visually allegoric way. Consequently, the interest in attachment theory continued to the present in my practice.

Another story from my studies that should be told in this chapter is actually the one where it all started: the studies and the first prototype that formed the basis of this thesis. Innovative Camp course was one of the first obligatory courses at AALTO. The core of the course was to face one of the problems of contemporary society with an innovative design idea, develop it and explain it by further implementation. During the course, I was working with a small group of talented classmates, whom I just met that time and unfortunately can not remember all the names, one of them was Alisa Närvänen. We were focusing on the lack of happiness in society, the gap between people and family members, lack of time to think, to learn, to experience and such. We developed many preliminary ideas. But the one we started working with was my suggestion of a design studio that would develop costumes for theatre, and simultaneously, a fashion collection inspired by the particular show; therefore, viewers who would be inspired by the

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show would have an opportunity to get this piece of clothes for their own wardrobe. This piece would have a special meaning for them and therefore, in my opinion, last longer.

It was a starting point, that only partly answered the problems we decided to face. From there, we went further and came up with an idea that was responding to our questions such as: How can design encourage people to be involved in culture and society; and How to add more value into the product so it will have a longer lifespan? We focused on bringing people into galleries and museums to be educated and inspired, and to think. We developed an idea prototype of the Ready-to-Paint project, or we called it the Fun Art Fashion Project (FAF Project), where we presented a process for people who come to the museum to have an opportunity to get inspired and draw on paper. Our facilitator would scan people's art, the customer would choose the product or piece of clothing he wants to be designed with his art, our design studio would make ready designs, the production house would produce, and customer later on would get, a readymade piece with embodied experience, memories and his or her art, and thus with added value. It was 2011, the idea was rough and not thought through, but since then it always was at the back of my mind made me notice similar tendencies in world practices and eventually became the basis of this thesis. In addition, this prototype was focusing on children as members of the families we want to draw into the museums, to educate, to inspire, to interact and to have fun with.

That time, we hadn't thought through how children's art can be similar to contemporary art and how we can benefit from that; later on I started to think about this direction. Moreover, having my own children helped me to deepen my understanding of different aspects of children's art, its some times spontaneous nature, and later on, its quality of a visual language. Consequently, I learned about the developmental steps of children's artistic expressions

and found proofs in books. Still, being educated as a designer, helped me see those aspects as an inspiration for future design work and implementing this knowledge to the Ready-to-paint project and the thesis.

Meanwhile, the production part of the thesis incorporated an extensive work with print pattern design that were co-created with children's artworks. In fact, I wasn't educated in print pattern making prior to starting Master's programme at AALTO University. Skills, knowledge and more importantly the love of print pattern making came from two courses during my MA studies: Colour and Surface, and following, PatternLAB. It provided me and 12 other talented coursemates of mine with deep knowledge of print pattern making, as well as building a commercial but artistic collection and, moreover, the understanding of how the industry works. Working with international team had broadened my artistic horizon and left me with respect for different visual and cultural styles. Consequently, I felt the urge to continue to work with patterns and do that in diverse styles, using various techniques, starting elements, visual effects, mood. However, seeing the industry in action, especially during PRINTSOURCE and Premier Vision markets for prints and textiles in New York, made me realize that I don't want to add to that endless collection of print patterns. Hundreds of patterns from one designer's seasonal collection that are desperately looking for its customer and rarely find one: that wasn't my ideal of future work. Therefore, I wanted to find a way to create distinct patterns that already have a connection to the future customer and that would be meaningful to him or her and visually attractive to many.

Similarly, that trip with my PatternLAB coursemates to New York in January 2013 became a trigger for me to refuse to further work in the fast fashion industry. Living and studying in Helsinki, Finland, put me into an imaginary bubble where fashion is responsible,



i19. PatternLab'13 team at Printsources Pattern Fair, New York, 2013.

consumers are thoughtful, designers are talented and respectful to nature, consumers and industry. But a short visit to New York, NY, USA, and seeing endless streets of fast-fashion brands with 70-90 percent discounts and mountains of unsold clothes, rushing people with bags full of clothes they will possibly throw away shortly after, small and giant second-hand shops and thrift stores where some part of these clothes end up and sometimes have a chance to second life. All these made me feel hopeless and fed up for some time. I actually got so depressed that I was part of this unstoppable machine, not only as a consumer but also as a designer and producer, that I wanted to quit fashion design. That was the point where the knowledge of alternatives gained from courses on sustainable development, durable design and emotional attachment in design, as well as zero waste production, provided me with the light in the end of the tunnel and gave the direction to progress and do what I love but in a different way. I do love design and the process of making clothes. I can't stop designing patterns and cuts in my head. However, I don't want to

multiply waste. That's why it took the form of zero waste production, co-creating with the user, and intention towards meaningful and long life for the clothes I design. It's only one way of many and I love the new direction many conscious brands are heading. I'm inspired how fellow designers are researching and really trying to produce ethically, to inform consumers, to love what they do, the people they do it for and the nature they are working with.

I believe that designers and users are the ones who can change the situation we find ourselves nowadays for better. And today's children are our future designers and users who will form our and their future due to these decisions and actions.

## 2 GOALS OF THESIS

Practically, this thesis aims to investigate the working process of co-creation with little artists (children), its benefits and challenges, the role of the designer, parent and child in this process, and its influence on aspects such as the value of the clothes, and emotional attachment created and effect on the lifespan of the clothes.

This process consists of several steps. First, to design a zero waste "white" collection of textile objects and clothes that can be used for printing with the co-created print patterns. Second, to develop the print patterns using the children's drawings. Third, to produce the finished zero waste garments and objects printed with co-created print-patterns and send these to the co-creators families. Fourth, to collect feedback and opinions, to assess the quality of the produced pieces, their artistic and personal value, and the emotional aspect created in the owner's relationship to them. As a result, I aim to briefly suggest a feasible working model based on this applied research process.

## 3 RESEARCH QUESTION

As a fashion practitioner, I'm constantly questioning contemporary fashion methods and my own working choices. I see myself as a critical designer who shares the belief that designer's role nowadays is to "design the future - not a product" (Corin 2013, p.89). This thesis gave me an opportunity to gather observations I have made through years of practice, work and studying along with other practitioners and researchers; to observe existing contemporary practices worldwide; and test the hypothesis of one possible way for future sustainable development of fashion industry and for my own design practice. The questions that are addressed in this work are a small part of a bigger question: "How can the clothing industry become more sustainable?" There are many working models and even more working hypotheses, that are suggesting solutions to this question from different angles and on different stages of the garment lifecycle. Based on my design intuition and observations, I narrowed down my focus to topics, such as consumer participation in the design process, emotional attachment or durable emotional design, and the possibility to educate consumers and most importantly future consumers (children) through their experience of owning a piece of clothing.

The questions that were first posed: How to add more value into a product so it gets a long-lasting lifespan? and How clothing can tell a story and be meaningful to the user and, therefore, sustain longer? It was narrowed down to one that take a closer look to a working hypothesis I developed through preliminary research:

***can co-creation with children become a sustainable production model in fashion industry? What are its challenges and benefits?***

Considering this thesis, applied research and production based work, the question I pose for my production part and further assessment of the produced work is:

*how feasible is the idea to make good-looking clothes co-created with children's drawings, and by virtue of it, achieve higher emotional attachment between co-creator's family and the product with a goal of its longer lifespan and reducing fabric waste in the fashion industry?*

Along my constructive design research some sub-questions were addressed too, such as what would be the appropriate production process, what are the ways to reduce or eliminate waste in the production phase too, and how can a future generation of consumer and their contemporary influencers be educated through owning the outcome of this co-creation process, what kind of values and activism can be communicated through such fashion practice, and what are possible future implementations of the idea and what are its challenges.

## 4 RESEARCH METHOD

*"We need research that puts consumer at the center rather than at the base of a very large pyramid...Research that counts the beats of your heart rather than the fingers of your hand"*

(Roberts, 1949 [2005]: 178)

When looking for sustainable solutions in the fashion industry, it is essential to consider that "sustainability can mean so many different things that it challenges practitioners to be visionary, adaptable and innovative" (Sherin, 2013:13). In my understanding it means that, first, intuition and observation skills are important for the design practitioner and researcher; second, that sustainable solutions come through learning by doing; and, third, more questions and solutions arise during the design and production process. In my practice, following intuition and observation, hypotheses are born. However, to develop a prototype or working hypothesis, the results of the observation and intuition should connect with knowledge gained in the past. To make it a matter of the thesis work, it should be supported with extensive research on related topics and similar practices.

As a matter of fact, this thesis looks at existing problems of contemporary society, such as the short lifecycle of clothes and extensive size of textile waste, and aims to suggest a practical solution and its implementation for the contemporary fashion industry; therefore, it is considered to be an applied research. Besides that, it adapts methods of constructive design research including methodical work of imagination, building prototypes and field research. It is important to understand that this thesis consists of several parts and each one follows its own set of research methods. The practice-based research part of the thesis is supported by preliminary social research, and includes social observation through reading literature on related topics, as well as in person and cyberspace observations (including social media). The practice-based research itself implements the logic of learning by doing with aim of developing working design prototypes for both system and products. The third part is an extensive work with study participants or research participants on several levels, that is discussed further. And last, I develop abstract theories and sug-



gestions based on the gathered experience and previous empirical research—theories for future implementations of the system that were developed in prototype.

In the social research phase, I as observer take a closer look to trends in society in the field of design and art, I evaluate different sustainable practices and business models that are similar or related to the proposed one, including online co-design and mass-customization platforms. In addition, I conducted short interviews through online media or in person with working practitioners and specialists in order to supplement the knowledge I gained from the literature I read.

In this way, the first part of the thesis focuses on finding support for the hypothesis that became a starting point for the project. As a designer, I am a strong supporter of the empathic design set of techniques that implement the logical consequences of observation: i.e.,

***capturing data > analysis and reflection > brainstorming for solutions > developing prototypes***

(Leonard and Rayport, 1997).

The second part of my research was mainly practice-based and focused on design work. “Design things are indispensable tools for transforming designers’ intuitions, hunches, and small discoveries into something that stays — for instance, a prototype, product, or system” (Seago and Dunne, 1999: 16). Two kind of prototypes were developed, prototypes that includes design objects (products, in this case mostly clothes), but also a working prototype model of an interaction with users. While working on the product prototype, challenges were addressed and researched, solutions were found during the experimentation and production process. The aim of this phase can also be viewed as developing and testing

a Minimum Valuable Product (MVP) for the business model, which is discussed in hypothesis (see Introduction). Along the way, in order to achieve goals of the production phase, mostly practice-based research of suitable textiles was done, as well as printing techniques, cutting techniques, together with assessment of the respective sustainability for each.

Eventually, any successful research program needs to be further implemented to society and function longer than the research phase (Koskinen et al., 2011: 125). According to constructive design research philosophy, the benefits of working with prototype are not limited by purifying the design features of a product, but the prototyping process helps researcher to be engaged in exploration of human’s behaviour and interaction with the developed product or system. Such observations can lead to new findings and ideas. Moreover, prototypes are a compressed way to encourage feedback and open up a dialogue with the end user (Suri J.F. in Koskinen et al., 2011:X-XI). Following this logic, the third part of the thesis research includes work with a worldwide group of research participants on several levels: to gather opinions, understand perceptions, values and needs; to test the flow of the working process with the user; to co-create the product using children’s drawings; to interview and ask about their opinions, perception and attitudes toward the developed prototypes; to observe their lives with the prototypes through cyberspace observation, interviews and questionnaires.

Consequently, a significant part of my research and the resulting thesis is user-centered. The thesis, in particular, takes a closer look at the younger generation, children, and their parents. For the research participants, I chose families from Europe, America and Canada. Families with kindergarten and early-school age children, whose mothers expressed interest to participate in the project. The important criteria in my choice of research participants was

their social media accounts they used on a daily basis. I recruited the following group of research participants: six families with all together eight children. In addition, an Instagram social media account was created to publicize the design process to a broader audience, with purpose of gathering feedback.

In the Ready-to-paint project, I did user research relying on the web sources, instead of working with people in the lab, to see how they use and interact with the products of my design work, I sent my prototypes to their everyday environment and let them test it. Social media is a window for me as a researcher to see how and if the product is used and read their feedback that was openly shared with the public. This is an additional tool and source to gather information that is supported by more conventional research methods, like interviewing the participants. I separately interviewed children with help of their mothers, and the mothers on their own. Due to location and time difference, all interviews were done by Skype, or using other digital remote connection technologies. The interviewees and I share the same native language. The questions were asked in English, but interviewees were able to clarify both the questions and their answers in our native language (Russian). The first round of answers prompted an additional clarifying set of questions, the elaboration happening based on how the discussion flowed.

After the half-year cyber observation, data capturing and analysis of the participants' interaction with ready garments, a new cycle of empathic design techniques could be conducted. The process could be continued with new round of brainstorming and developing improved prototypes, but this lays beyond the scope of current thesis.

The issues that will be covered by the research are:

*design for emotional attachment, that meets fundamental human needs in the person-product relationship; sustainability and children; children as co-creators of visuals and collaborators in the design practice; public involvement in the business, design and art practices; mass-customization, and zero waste design practice;*

**Table 1** illustrates what fields of research, approaches and methods were used in this work and discussed above (the ones that are used in this thesis are underlined in green).

**Table 2** features some of the research methods and the reason each was used.

**TABLE 1**

Field		Approach	Method	
Fundamental Research	Scientific Research	Pure Empirical	Laboratory Experimentation	
		Positivist	Quantitative	Focus-group
Applied Research	Social Research	Anti positivist	Qualitative	Questionnaires
				Surveys
Constructive Design Research				Interviews
				Dialogs
		User-centered Research	Observational	Participants' observation
				Cyberspace observation
		Empathic Design	Field Research	Literature Review
		Practice-based Research	Lab Research	Research group of participants
		Participatory Research	Showroom Research	Case studies

# TABLE 2

What kind of research	Who/ Source	When	Why / Reason	How
Interview <sup>1</sup>	Anna Kegeles art teacher	1st interview: December 27/14 close-up inter- view: October 13/16	To gather professional opinion and perception, consult regarding working with children	Open-structured interview through Google Docs and Facebook Messenger
	Printing company Spoonflower	January/16	To deepen the knowledge in print- ing technologies, its challenges and advantages	Open-structure interview through email
	Study partici- pants: Children	December/15	to gather opinions, understand perceptions, values and needs of first children users	With help of moth- ers: video or audio recording Sent through email
	Study partici- pants: Adults	October -Decem- ber/ 16	to gather opinions, understand perceptions, values and needs of first adult users. To get an understanding of emotional at- tachment to the produced clothes and objects.	Closed structured interview through Google-forms and email
	Mothers	December/16- January/17	to gather public opinion, under- stand perceptions, values and needs of future users	Short closed-structure interviews through Instagram
Survey with Questionnaire	Study partici- pants: Adults	December/ 16	To assess quality, durability, fit, visual appearance, value and other factors of ready garments.	Google Forms

**1.** For every interview, questionnaire and survey conducted, a legal agreement to disclose the provided information was made, and all participants legally agreed to provide their names, personal information and answers for research purposes and for publication. Furthermore, parent research participants digitally-signed the agreements that they officially allow the use of their children’s artworks for design purposes, including changes, color correction and other design adjustments, as well as they agreed to publish and even sell the original artworks and designs based on these artworks. They also agreed to publishing their photos and photos of their children in this work. Other artworks and photographs may be protected by copyright; however, these were used in the thesis in accordance with fair use principles. “Fair use is a legal doctrine that promotes freedom of expression by permitting the unlicensed use of copyright-protected works in certain circumstances, such as criticism, comment, news reporting, teaching, scholarship, and research” (Copyright.gov, 2017).

Cyberspace observation <sup>2</sup>	Wikipedia	Reading and writing periods Spring/15, Spring/17	To analyze and understand system of meanings of people I address my design work to. Research an average public opinion	Online
	Related business practices Bloggers-mothers Art museums, Artists, Art-bloggers Fashion-bloggers	All time	To observe tendencies in society and businesses	Online, Instagram platform, Blogs, Webpages
	Research participants	All time	First, to observe personal styles, values. Secondly, to analyze participants' use and interaction with ready objects. Read feedback shared openly with public and future users.	Instagram, personal blogs, Facebook
Practice-Based Research	I, designer and researcher	Summer/15-Summer/16	To find best suitable solutions in textiles, cuts, colors as well as in printing, cutting, sewing methods. To produce white clothes - prototypes and first printed zero-waste prototypes for future test by focus-group.	Designer's studio, Printing company Clotho.

2. "Field researchers believe that to study humans and their use of design they need to understand first their system of meaning" (Koskinen, I. et al, 2011: 69). With this in mind, I want to justify the use of such sources like Wikipedia and social media resources in this thesis work. Many theoretical researchers find such sources beyond the academic framework, therefore I want to specify why I find it appropriate to use in my work and how I use it. I agree that, while not authoritative, Wikipedia and social media can become a source of understanding basic terms as well as reference to more in-depth resources (Cohen et al., 2010: 32-34), but most importantly, it is a source of information that most non-researchers, ordinary people use for searching information and building their opinion on subjects that I research in this work. Therefore, getting back to field research methods, I see Wikipedia and social media platforms such as Instagram as a platform to analyze and understand system of meanings, desires, thoughts of people I address my design work to.

## 5 PROCESS

My personal observations of public, field and cyberspace fuelled the idea that was first presented during Innovation Camp in Autumn 2011. But I only started to work on the idea and improve its first version in Summer 2014 after main studies in AALTO were finished and a year-long break in my studies. The reason for the break were difficulties in personal life, mental crisis and disbelief in fashion industry overall, that stopped the inspiration process. However, this crisis brought back strong will to find sustainable solutions and implement it to the thesis. The working process would have started much earlier, but due to personal reasons, I had to relocate to Canada. Thus, all the thesis work was conducted remotely from the studios, libraries and supervisors in AALTO, which has definitely slowed down the production process. My home studio was built from the scratch in order to be able to design prototypes, cut and sew garments.

The overall process of this thesis is visualized in **Table 3**. Even though I visualized the timeline of the most significant processes of the thesis, the theoretical, observational and production parts are interwoven with one another, along with gathered data from related literature and interviews with field professionals, to support my practice-based research process.

This project working timeline starts in September 2014 in Vancouver, Canada, and ends with a presentation in May 2017 in Helsinki, Finland. Two extensions of studies was needed to completed it for a variety of personal (the birth of my second son, for instance) and professional reasons (e.g., the different time zone locations of the project participants).

The core of the research is a production phase and a close examination of the participants' perception of their involvement into development-production stage. Children were asked to make drawings, and later, given some art-related tasks, with the results collected and used for the further design work. These pictures, drawings and abstract artworks produced by the children were then developed into placement prints and print patterns using different textile pattern techniques, which were researched and presented along with examples of transformed patterns based on participants' designs.

Afterward, in the practical design phase, I developed the "basic" clothing collection using the white textiles with a zero waste pattern making technique.

For the production phase, the research of textile producers was undertaken, as well as printing techniques, along with assessment of their sustainability and eco-friendliness.

As a result of my research, I chose three options of different fabric, along with the most suitable printing method for the purposes of making a customized production line of zero waste garments: i.e., the collection of so called "Ready-to-paint" garments.

Garments of the collection were produced in both child and parent sizes. After developing the white prototypes, all garment patterns were transferred to digital format. As patterns were zero waste, the whole surface of the fabric was used, which created the perception of 2D surface as an empty art canvas that is ready to be filled with the meaningful story created through the children's drawings.

Throughout, the creative process was documented, in some cases different options of patterns were presented to participants for their choice.

As a result, the final developed prints were printed in chosen fabrics, documented in a photoshoot, and sent to participants for testing. The in-depth interview of participants took place after this stage, in order to get feedback about the quality, usability and wearer satisfaction of participants.

Assessment of the feedback was made, including evaluation of the users' emotional connection with the garments and how this could possibly effect the durability of garment. In addition to feedback from the participants, I concluded with my own reflection on the process and research, especially on the question of how participant involvement in the design process creates a meaningful experience for the younger generation and their parents and creates a significant value for them.

The garments were photographed by Vancouver-based photographers George Kronberg and Evgeniya Rodionova before they were sent to the participants of the research group. Afterward, they were photographed by users themselves during their everyday life and summer vacations. Family albums were made with these photographs for the final presentation.

For the thesis presentation and evaluation, white prototype garments, textile samples with co-designed prints and the family albums were introduced together with a few garments sent by their owners for the presentation time-period.

The layout of this thesis was done by Maritere Vargas.

The thesis process was guided by my advisors Kirsi Niinimäki, Doctor of Arts in the Department of Design, and Elina Peltonen, lecturer and PhD student at AALTO University School of Art, Design and Architecture.

## 6 OUTLINE OF STRUCTURE

Logically the thesis is divided into three parts: first, theories, observation of trends in society and business, and research of concepts and related practices, second is design, co-creation and production process, and third is findings and abstract ideas for future development based on the first two parts.

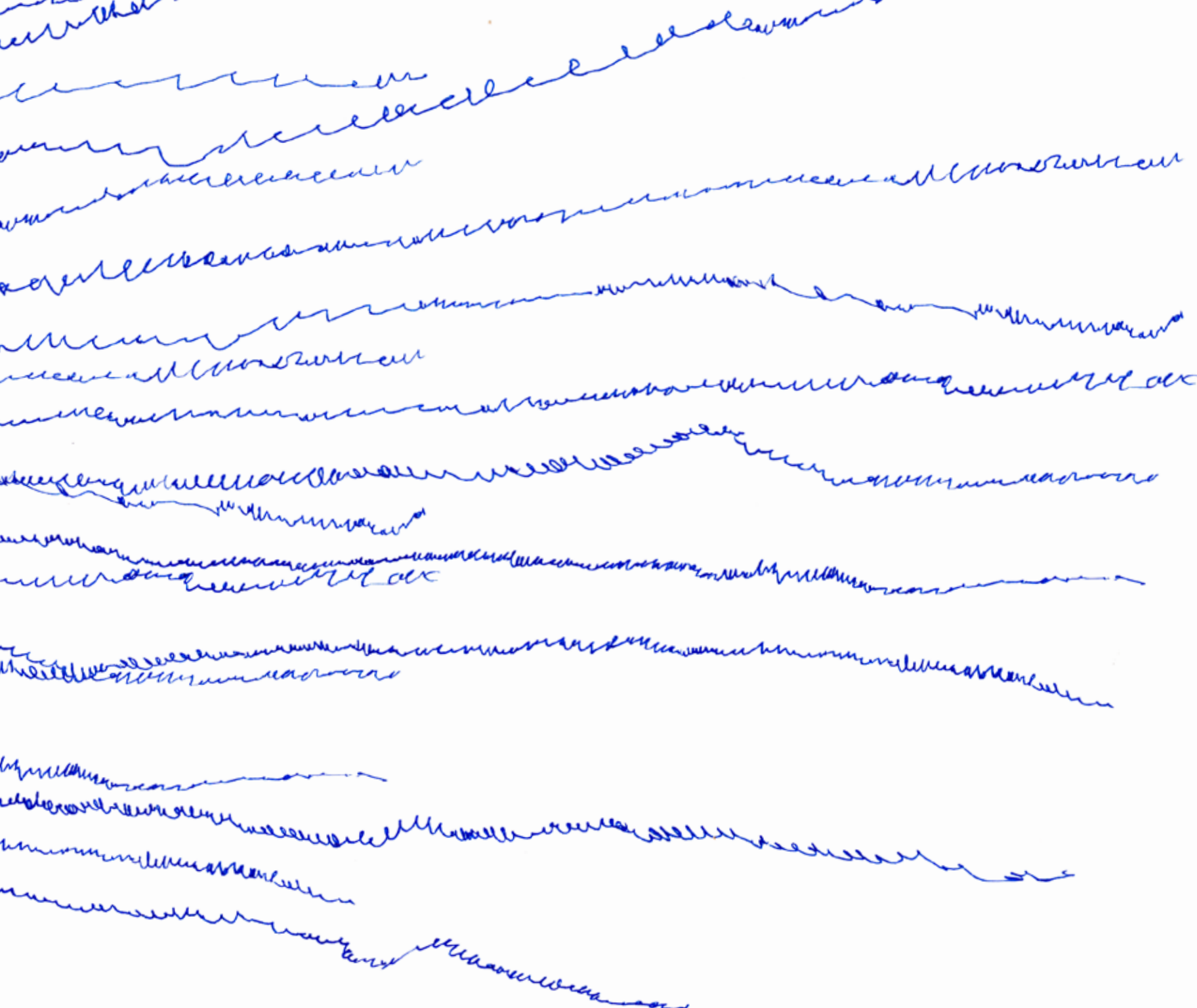
Therefore, Chapter 0.5 is introducing reader to the concepts and practices related to the thesis work. Afterwards, Chapters 1, 2, 3 are concentrated on aspects of design work and different roles inside the process. I first highlight the user story (chapter 1) and discuss working process with the user, and in particular my study group of participants. Then I present the designer part (chapter 2), where participants are not involved and where only the designer makes decisions. Therefore, this part covers design decisions, such as collection style, textile choices, printing methods, label design, cuts, sewing technology and other related to production process. The third chapter "Together" is devoted to the results of the co-creation process. It ends with assessment by study participants of qualities, fit and other aspects of ready garments. It also features the feedback from the study participants and public, in terms of their opinions and perception, as well as emotional attachment to the garments received. The last chapter briefly suggests ideas for future development of the project based on the experience and knowledge gained throughout the thesis process. I conclude with personal evaluation of the process and reflection on gained experience.

**TABLE 3**

Process	2011 Autumn	2014 Summer	2014 Autumn	2014-2015 Winter
First brainstorm with group in Innovation Camp course				
Relocation to Vancouver, Canada				
Production studio set-up				
Thesis Plan Approval				
Active reading stage, Literature review				
Research participants recruitment				
First set of drawings from research participants (no preliminary tasks)				
Interview with children of research participants (audio-video)				
First Interview with art-teacher and consultations				
Measurements of research participants				
Drawings with preliminary task				
Print-pattern development from children drawings				
Printing tests with different companies				
Local printing company - sponsor agreement for printing and fabric				
Printing and fabric tests with Sponsor				
Zero-waste prototype development				
Printing final zero-waste garment-cuts with Sponsor				
Sewing				
Garment's photoshoot with models				
Research participants got their garments and tests it				
Follow up interview with art-teacher				
Legal forms and agreements with research participants				
Interviews and Questionnaires for adult research participants				
Cyberspace observation of practices and users				
Writing				
Thesis Presentation				



[illegible]



## CHAPTER 0.5

# CONCEPTS & PRACTICES

As my personal interest originally lays in involving children and adults in the creation process and understanding further benefits of such approach, I aimed to assess relevant information and observations from the perception on how changes in society of the last two centuries influenced the public itself and its readiness to be participants in the production processes.

In my observation, the 20th century had influenced contemporary society to accept that everyone can be an artist, a creator and experience the world in their own way, but also had shaped a new society that is ready to create, just bring it the tools. Not only contemporary artists turned their interest towards the dialogue with the viewer, but such conventional institutions as museums developed through time to the stage where they became more than just keepers of collections but also platforms for co-creation and other creative exploration experiences. And while the elder generation went through this change simultaneously with the art world, the younger generation was already born to the art scene where they are often considered as participants. Recently published book “Why your five-year-old could not have done that” by Susie Hodge (2012) researches how contemporary art differs from the art of our children through its concept and philosophy

and shows the way that brought us from the form of classical art to this stage of contemporary artistic language. While many contemporary artists of last century were rejecting all the previous art forms and were questioning the purpose of art and its new language, the purpose of provocation and this denial laid in a desire to educate the viewer, to make him or her think and analyze, simultaneously bringing art closer to the society compared to the previous century.

Popularization and a significant raise of interest in handmade local studios and practices, as well as online platforms with co-design tools, have been only a part of the result of such a transition of society. This shift in perception of the individual as a participator and co-creator, co-designer, co-producer rather than just viewer and user—this shift brought to the business world such terms as emphatic co-design, human centered methods in design practices, and as a result, emotionally durable design, where involving the public in design, production and usage stages is a significant part of the whole process.

Through the preliminary literature studies and observation, I came to a conclusion that public involvement is not only an issue that marketing strategists use nowadays to reinforce sales flow, but it's also the trend that simultaneously emerged in different fields, starting with contemporary art where the viewer's role had changed. That explains my interest in the topic of how the public-involvement practices work in such fundamental institution as museums where the public historically used to be a silent viewer rather than an active participator.

Such focused research on museum practices and children's position in contemporary world helped me to build a better understanding of how my thesis' outcomes could be implemented in the real world.



i20. Today's children are raised in contemporary art realm. Children who visit museums often observe artworks that technically could be done by children

## ***1 PUBLIC INVOLVEMENT***

### ***1.1 DESIGN FOR EMOTIONAL ATTACHMENT***

My personal interest in this subject started during my first fashion internship at the Folk Costume Museum in Moscow. The Museum's research into and restoration of folklore costumes opened up to me the history of zero waste patternmaking practice as it was

originally practiced. During this time, I got a chance to have a close look at pieces of clothing that were made with passion and worn by its owner in the same manner. Every textile pattern or decoration on the costumes had a meaning for its owner, therefore strong personal attachment between user and cloth were developed, those pieces were saved through time for younger generations and, long-term, belonged to several generations of one family. Contemporary practitioners call it emotionally durable design practice. The industrial revolution has taken us far away from this connection with our clothing.

In my observation of person-product relationships, I noticed that consumers in the era of mass production often build a connection with clothes through the life stories they had lived through. The recently published book, *Worn Stories* by Emily Spivack (2014), is dedicated to such mass-produced pieces of clothes that have value for their owners, not because of the originality or individuality of the clothes, but because of the memories, stories and mostly nostalgic feelings of the owner has towards them. I find this urge to invest memories into a piece of clothes to be a natural human need.

Many contemporary marketing books and articles write about the importance of story in the business realm. Through the story, brands connect with their consumers. These stories are sometimes artificial and were born in the heads of marketers rather than being organic, others develop through the time along with development of brand itself. Some brands want to embrace eco-trend and green practices, while others simply use a green-washing marketing strategy. While mass-produced fashion brands sell trends to the public, high-fashion brands sell their elite brand story as a significant addition to the price tag. For many people,

those trend-stories as well as brand-stories do have a value, even in spite of the way storytelling is known to be used to make customer experience more personal.

On the other hand, through recent decades, many small local brands, starting with food brands and ending with fashion ones, were born with their own original local story with an approach to sustainable, slow fashion and other “green” practices. In some cases, such as with eco-brands or secondhand shops, buying a piece of clothes often becomes a form of activism too. These brands were able to bring back intimacy to their relationship with consumers. In return, they attracted so-called inspirational consumers (the term defined by Kevin Roberts, 1949), consumers who support a brand’s values and will promote the brand by telling their story further.

This was one of my ultimate goals when recruiting the study participants. Those first six families, who tested the project from its very beginning, was supposed to build (or not build) an emotional attachment not only to the outcome but to the overall idea and values of the project and either pass (or not pass) the word about it along further, to their friends and social media followers. Because, in order to test the idea of the brand,

***“emotional connections with consumers have to be at the foundation”***

and contemporary consumers are becoming more and more attracted to where the love is (Roberts, 1949 [2005]: 34). Love of nature, love of the consumer, love to their children, love to their creative expressions and abilities, and love of fashion—these are the focus of the Ready-to-paint project. In fact, I wanted to create a prototype of a future lovemark:



*“lovemarks are created and owned by the people who love them. Where you have the customer in love you have a lovemark.”*

(Roberts, 1949 [2005]: 71.)

Even though, as I just stated, the story behind the production of a clothing label is getting more and more relevant to the consumers, this is not the only way of building emotional attachment. This can be added to ordinary clothes from an unknown brand or from a mass-production brand, simply because we humans tend to build attachments. Based on examples from the Spivack’s book (2014), and my personal experience, I think these attachments are often built on the memories that happened to a person while wearing it, or at the moment of buying that piece of clothing, rather than on the story behind the clothes or brand. The dress can be saved and loved because it reminds someone of the exact moment of the marriage proposal or it reminds them of a dress from the childhood and childhood is a happy place of memories for many of us. The reason for this is that “the emotional brain filters all incoming information and, if it is emotionally stimulating, it will be marked for memory” (Sprengrer, 1949: 2).

In 2012, I performed a slow fashion project with outcomes that are still in the process of testing. Choosing a summer photo of a little boy (five years old approximately) when he was wearing a t-shirt with a bright red pattern, I recreated that pattern, adjusting the proportions to the adult man this boy has grown into. Two test t-shirts of different sizes were made with that pattern and gave as a present to this man. After five years both t-shirts are still loved and worn on a weekly basis, even though he reported that the fit has changed through time. Image 21 features the old family photo and the new t-shirt on the background, image 22 is from family archive of the owner, where he is wearing the t-shirt and hugging his son.



21



22

Another t-shirt with the same pattern was made later (2016) through the mass-customization platform Printalloverme and I gave it to the same person. This one became his favourite because the fit is proper. (Personal conversations with George Kronberg, 2016-2017.) These t-shirts from the very beginning had been embedded with childhood memories that were associated with the photo.

Similarly, the target of the design process in the Ready-to-paint project is in summer dresses and skirts for children and their parents - these are the garments that more often tend to stay in one's personal memories and be captured in family photos. Images 23-28 from the following page represent such family photos that are going to be saved for lifetime by families. Making these pieces of clothes (that people wear during their summer adventures) printed with patterns that are co-created with drawings by family members helps to build an emotional attachment through the story of those drawings and the fact that these drawings are theirs. It makes the piece of clothes personal and garments with memories embedded—and that is the natural outcome of design for emotional attachment.

## **1.2 USER-CENTERED DESIGN**

User-centered or human-centered design suggests to researchers and practitioners to have faith that human problems can actually be solved and that the key to solving the problems of humanity are in the hands of humans. Therefore, this approach “offers problem solvers of any stripe a chance to design with communities, to deeply understand the people they’re looking to serve, to dream up scores of ideas, and to create innovative new solutions rooted in people’s actual needs.” (IDEO.org, 2015: 9.) Fundamental problems that my project tries to face in its practice are a lack of attachment to the clothes people buy nowadays, and therefore, an excess of

textile waste. The problem of textile waste is tackled on different levels—production waste and end of lifecycle waste. The participatory approach of this project is user-oriented at its core. All decisions were made with the end-user in mind. Moreover, when a researcher studies the design process and its outcome, he/she generates knowledge about design techniques and processes, as well as about how people understand and appropriate these designs (Koskinen et al, 2011: 168). Likewise, a fundamental principle of innovation or creative thinking is to begin work with empathy and learn from observing human behaviour (Kelleys, 2013: 222).

Obviously, a new product or service have to face a real—or perceived—customer’s need. However, humans’ ability to direct the development of new ideas is often limited by the boundaries of their past experience and imagination (Leonard and Rayport, 1997). Likewise, if I, the designer of Ready-to-paint project had asked my study participants how would they like the designs to be, prior to the design stage, I would probably never receive an answer “zero waste”, simply because they are not familiar with the problems contemporary fashion industry and humanity face. When they buy clothing, they are guided by brand name, fit, color and not the amount of waste this dress will produce (Study participants survey, 5-22 January, 2017). Therefore, an empathic design approach was used to resolve the dilemma of limited user knowledge and experience. At its foundations lies observation—watching consumers use products in their everyday environment in the course of their normal everyday routine; gathering information from observation in the field—prior to the design stage and after the design stage and its analysis and application—these are the emphatic design techniques that were broadly used in this work with the end goal to meet the needs not only today’s needs of users but of future generations too.

23



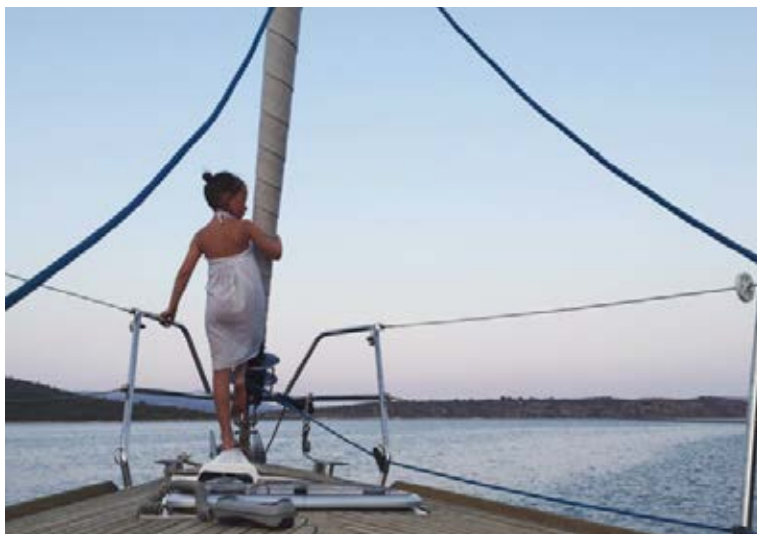
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### 1.3 CO-PRACTICES

Initially, this thesis was called “Ready-to-paint. Co-design with little and big artists in a fashion practice.” Since I got familiar with the terms better, the term “co-design” was replaced with “co-creation” due to its better fit with the processes involved in this work; moreover, the framework was narrowed down to little artists only. Based on my research, I would like to differentiate these related terms, so the context of my work is understood better as well. All of them have one characteristic in common: involving the consumer in the company’s processes, either the design, production, brainstorm or others. Before the differentiation of the terms, I would like to explain the reason why these techniques were considered in my design practice.

Nowadays, one of the biggest challenges of product design is the short-term satisfaction, which leads to the premature disposal of goods due to a lack of emotional attachment. Taking into consideration the amount of waste produced and thrown away annually, recycling or eco-efficient production methods do not solve the whole problem. Therefore, to foster significant change, sustainable lifestyles should be encouraged through design practice and not only through consumption of sustainable products. Consumers should be invited by designers to become active participants rather than passive recipients and through this practice gain the knowledge on how things are produced and consumed. Moreover, emotional bonding with the product, philosophy and brand is created through the participatory processes. (Niinimäki, 2013: 176.) For these reasons, in the Ready-to-paint project the user—mothers and their children—were invited to participate in the design process with their artworks.

In a nutshell, according to McDougall (2012) user involvement frameworks roughly run as follows:

- Supplier-centered design (supplier determines the limited design options for consumer to choose from);
- User-centered design (design that is led by observing people, the designer is in charge—the framework this thesis tends to fall into);
- User-led design (designers mentor people through the process, users articulate the problems and solve it for themselves, therefore the user in charge);
- Co-design (collaborative work of designers, suppliers and consumers with the goal to describe a problem and find a solution to it);
- There is also such methods as co-production, co-creation and crowdsourcing. Main statements on the latest are presented in **table 4**.

**TABLE 4**

Co-design	Co-creation	Co-production	Crowdsourcing
<ul style="list-style-type: none"> <li>co-design takes place when more than one person is participating in figuring up a plan for doing something, usually design work.</li> <li>usually unsuccessful if the ability to think like a designer is not present in one of the participants of the process. (McDougall, 2012.)</li> <li>few customers can be co-designers since co-designing needs a lot of physical, social and cultural contribution from the parties (Agrawal, 2015:151).</li> </ul>	<ul style="list-style-type: none"> <li>co-creation depends on the skills of a specialised group to work on one solution (McDougall, 2012).</li> <li>is “a joint collaborative activity by parties involved in direct interactions, aiming to contribute to the value that emerges for one or both parties” (Gronroos, 2011).</li> <li>is often used in business to describe the involvement of customers in developing products and processes (Metz, 2015).</li> </ul>	<ul style="list-style-type: none"> <li>co-production bases on the approach when few parties are involved in bringing ideas to life, in the process of actual implementation of the proposed solution (McDougall, 2012).</li> <li>is often discussed in socio-environmental science to invite users to be participants in administration and delivery (Metz, 2015).</li> </ul>	<ul style="list-style-type: none"> <li>“crowdsourcing allows businesses to use the input of multiple sources, both within the corporation and externally, to develop solutions for strategic issues or to find better ways to complete tasks...Mobile world population allows for people from anywhere, and with any background, to give their input on a project.” (Kreutz, 2014.)</li> <li>bases on the idea that the more participants are working on the problem the more ideas and skills are involved, what leads to improvement of the quality of final result (Bratvold, 2016).</li> </ul>
<p>It would be a mistake to call the Ready-to-paint process co-design activity, because in this case, designer and little artist or his/her parent should be involved in design process equally, which is not the case.</p>	<p>The thesis uses co-creation term when talking about the Ready-to-paint project as it sees its goal to produce unique pieces of clothes that inspire emotional attachment, the little artist is skillful in creating the art material, and the designer in developing garments and print patterns. The value of the final product is co-created together by the user, designer and producer.</p>	<p>Ready-to-paint can be considered a co-production process as well. “Materials” are then the children’s artworks. Working out what to do with them is the designer’s job.</p>	<p>Crowdsourcing may become a possible solution for further development of the project. For example, in creating a target collection with children drawings.</p>

While there are some differences in these terms and definitions, it is clear that nowadays “co” processes are recognized as important across fields (Metz, 2015). Technology development provided modern users with wide range of opportunities to be active and influential. Nowadays, participatory processes can be organised through various channels, that often take place on the Internet using modern technological platforms and services. (Seppä and Tanev, 2011.)

In conclusion, co-creation in Ready-to-paint model is a participatory act through which I hope to increase value of the final outcome for its user, to create an emotional bonding and therefore face the challenge of over-consumption and textile-waste problem of contemporary fashion industry.

## **1.4 MASS CUSTOMIZATION**

Recent searches of practices that would increase the level of consumer involvement with a brand discovered such trends as mass customization and made-to-order practices. In the Ready-to-paint project, mass customization is at its core and all the garments are designed to be made-to-order. Zero waste cut-patterns are developed to fit the exact width of the fabric, thus these cut-patterns stay the same for every size or sometimes for several sizes together, but the print pattern and information in the label changes, depending on who is the co-creator and future user. Thus, in this subchapter, I briefly cover the framework and benefits of mass customization that implements the made-to-order approach.

Instead of making decisions for the customer, industries are providing choices on designs for packaging and products that can be further adapted to individual ‘tastes and traditions without compromising the integrity of the product (McDonough and Braungart, 2002: 141). Basically, through the customization

process the consumer has a choice among different options to customize the design of the mass-produced item depending on his tastes and preferences, and this experience would make the product more individual, thus companies are providing unique value to their customers in an efficient manner. However, mass-customization has different approaches, and its execution varies. (Gilmore and Pine II, 1997.)

Gilmore and Pine (1997) differentiated four types or “faces” of mass customization.

- Collaborative customization:

customer is given an opportunity to express his needs in the dialogue conducted between him and a firm, then the appropriate customized design product is created. This type is suitable when users prefer not to be forced to choose from the predefined options and their needs are not obvious for the producer.

- Adaptive customization:

there is a choice of standard design products that can be customized by the customers on their own using available technologies.

- Cosmetic customization:

the same standard product is presented differently for different customers.

- Transparent customization:

a firm makes decision on its own and customize product or service for its customer without informing them. This type is possible only if the customers’ needs are transparent enough to the firm.

The Ready-to-paint approach in this thesis implements the techniques of collaborative customization, but the business model intends to fall into adaptive customization framework. The study participants were recruited, interviewed and researched for bet-



ter understanding of their needs prior to making designs for each person, but apparel garments were designed so that they fit most and afterwards are customized with co-created designs and labeled the relevant information for every participant. Still, at the core of the future development of the project is the choice of designed fits and cuts that are ready to be combined with co-created unique patterns and be produced and labeled for every customer individually.

Mainly, the fashion approach to personalization and customization can be divided into three additional types: monogramming, partial customization and full customization. The personalization of a product via monogramming is the most basic service: customer's initials, logo or personal details are monogrammed to the products making it more personal for the customer. Partial customization gives a customer a choice of elements that can be mixed and matched in a design of a product; however, the customers are limited with options, so that they can create a 'custom' product but not entirely. Finally, third is when a customer can create a one-of-a-kind product by changing most of its elements, which means the final ready product is 'for the customer, by the customer'. (Mohanty, 2016.) Since 2012, Nike provides its customers with NIKEiD service that mainly focuses on footwear, where selection of shoes can be personalized by the customer, who can easily change the color, print, fabric from a wide variety of choices. (NikeiD, 2017) Other shoes and apparel brands are following Nike's lead, providing customers with more choices to make the final product more individual and loved. More examples will be presented in the next subchapter.

Rapid development of digital printing methods and equipment opened up a whole new world of possibilities for the production of such mass-customized products. A big role in such practices are played by patterns and prints, while the basic shape of the prod-

uct stays the same. Such platforms as society6.com, denydesign.com, spoonflower.com, Printallover.me and others came to market with the rise of textile digital printing and nowadays allow the customer to choose any pattern or art print they want from a choice of individual artists' uploads, connecting artists from around the world with consumers, while overseeing the production process. In support of such practices, I can say that they make a difference by producing only the exact number of items ordered and not more, thus cutting down on waste, as well as creating a positive kind of product-consumer long-term relationship.

What interests me personally, in cases where customers are able to choose from wide variety of prints made by designers and artists, is whether the personal connection to such prints really strong. Do the prints alone provide personal connection for customers, do they have personal meaning? For myself, it is definitely nice to have choices and make the product more individual than to shop for mass-produced goods, but I can't say that a personal connection and attachment to the outcome is very strong. On the positive side, this approach gives the opportunity to build a closer relationship with consumer by providing him or her with the ability to choose the design/artwork they feel the connection with, instead of the choice being made for them, as other brands do. But I also believe, for the end consumer, the piece of clothing that was fully designed by fashion house designer, and the piece of clothing that was produced with a design that the consumer chose from a given range, has almost the same value when it ends up in his or her wardrobe. This is only one step closer to meaningful experience. To get an actual "artwork" from a consumer and design a fashionable piece of clothing based on it—this would make a bigger difference and increase the value and meaning of any fashion

item for its owner. This basically summarizes my hypothesis of this thesis and, therefore, this approach was chosen for Ready-to-paint model.

## ***1.5 PUBLIC INVOLVEMENT:***

### ***IN BUSINESS AND DESIGN PRACTICES***

In previous subchapters, I discussed different approaches of involving public in the decision-making process at various stages of the business and design practice. In the present subchapter, I intend to present particular examples of such business and design models, some are more relevant to my own practice, some are less relevant but significant for the history of further development of such practices.

Different forms of collaboration, participatory practices, and user-involvement are emerging and successfully functioning nowadays. Some aim to gain knowledge for a positive change at different levels, either for one's home, or one's business or whole world; others are making change by educating consumer through his/her positive experience of being involved in decision making; a third may aim to develop a much-needed emotional attachment to the product and brand by asking the customer for their opinion fulfilling their needs. Approaches vary, but on the whole, the trend undeniably characterizes contemporary progressive businesses and design practices.

First, I want to present several examples of crowdsourcing practice. Crowdsourcing and public involvement can create a valuable stream of new ideas for businesses. For instance, General Mills came to the idea that public has a greater potential to innovate and might have valuable solutions for the company's goal "to better serve the world by making the food people love". Since 2007, the General Mills Worldwide Innovation Network (G-WIN) is

functioning to crowdsource ideas from the public, innovators and entrepreneurs helping the corporation to deliver on their purpose. (General Mills, G-Win, 2017). This is an example of how global corporations can innovate and change for the better through public involvement in their business model. Other ventures can use crowdsourcing to generate ideas for a better future for our population, such as at the company, IDEO, or the MIT Climate CoLab. The Climate CoLab is engaging more than 10,000 users in its crowdsourcing digital platform to contrive collaborative solutions for climate change (Kreutz, 2014). In the same way, IDEO launched its platform, OpenIDEO, to form a global community to work together on the world's biggest social and environmental challenges. In both examples, people are invited to join through online platforms and exchange ideas, connect with others, form and help projects they care about (Openideo.com).

Children are also considered as valuable source of innovative ideas, but gathering ideas from children can be more challenging due to their age and lack of free access to the internet. Usually children are able to collaborate though their parents, educational institutions, kindergartens and schools, or museums. In one example of crowdsourcing, with roots in Belgium, "primary school children were asked to create "dream machine" concepts which were then vetted by college design students. High school tech students then built prototypes for everything from a self-made bed to a recycling robot." (Kreutz, 2014.) Nowadays, this project has grown into My-Machine Global Foundation and honoured by the United Nations, the educator Sir Ken Robinson, UNESCO, Open Education Global Consortium, and the Creativity World Forum, which is following its mission to implement their unique and proven methodology internationally and to reinforce local partnerships of elementary/ kindergarten, secondary and higher education institutes ([www.mymachineglobal.org](http://www.mymachineglobal.org), 2017).

Going back to the design industry, the last two decades saw numerous online crowdsourcing platforms that connect businesses with design practitioners and the public with designers, not to mention the fact that every person, no matter of his or her education, can participate and try his/her skills in the design assignment. A platform like cocontest.com, for example, provides a place where anyone can launch a contest to have his/her personal room(s) or space designed. Similarly, businesses are starting contest projects on the crowdspring.com online platform for various design assignments, such as logo design, webpage design, book cover or brochure design, and so on. The benefits of such open approach, compared to traditional ones, lays in multiple proposals with endless perspective from designers all over the world with different backgrounds, professional levels and styles. Crowdsourcing allows for additional cost savings that would typically be charged when working with designer one-on-one. On average, the cost of the chosen design proposal will be less than paying hourly wage working with a designer in the traditional way. (cocontest.com.)

Speaking of the apparel industry, one of the first successful online crowdsourcing platforms launched in year 2000 was Threadless, consumer driven company. Its business model is based on the work of an online community of designers and web page visitors. (Threadless.com). Designers (and customers, as well) are provided with technologies to upload their artwork for screen-printed T-shirts. The online community chooses the best designs by voting, and only winning designs are produced and sold as limited editions. "This rigorous consumer engagement process results in popular products that always sell out fast. The company limits the production of each design as they have no shortage of innovative,

proven popular, incoming ideas. These limited editions in fact create an air of originality and uniqueness definitive of the company's brand." (Lorimer, 2014.)

The rapid development of digital printing technologies allowed apparel businesses to provide customers with a wider range of products made with the mass-customization production approach. E-commerce and 'Design-Your-Own' interfaces use digital technology innovations to invite users to create their own configuration of design and order the product online. The base products with customized appearance are produced using similar processes to mass-production but it is done on individual scale. (Smith, 2014: 438) This approach mostly falls into an adaptive type of customization (see previous subchapter). Sport shoes companies like Nike and New Balance launched their online platforms providing their customers with choices of basic models that can be modified according to color, fabric, print, as per the consumer taste, through an online interface on the company's website. Every customer can place himself in designer's shoes and design-their-own almost unique pair of shoes. This is an act of co-designing: designer has prepared well-designed and ready for production product bases, and the user makes their decorative design decisions from available options with no help from the designer. Products are produced on demand, making this approach a made-to-order business model.

Similarly, the spread of digital printing technology has influenced on the launch of new companies that implement the made-to-order and co-design approaches from their very beginnings. The Spoonflower company, for instance, started with fabrics printed on demand with crowdsourced designs. It aims to have designers co-design with the customer, but provides access to online software where any person with little understanding of design can co-create a product, which in the case of Spoonflower is the

fabric. Before digital printing technology was introduced, such services wouldn't be possible to keep prices competitive with average prices in fabric stores. Pattern designers around the world are uploading their pattern designs for customers to browse through and order any amount (starting from one yard) of their favorite. Moreover, any user is free to upload their own designs and order it printed on chosen fabric, paper wrap or wallpaper. The same approach and method is used by such online platforms as Denydesign.com, Society6.com and Printalloverme (paom.com), Apliiq.com, Spreadshirt.com and many smaller ones—the difference is in the products that are available as the bases for further co-design. Some are concentrating more on the apparel and accessories, others on home décor, a third would combine both, including small objects such as phone cases, post cards, pouches, wall art, and so on.

The recently launched company PictureThis (picturethis.com, 2016) is focusing in particular on children clothing co-designed with children using a simple approach. Mothers are asked to print the cut of a basic girl's dress, give the printout to her daughter to draw on it, scan it when it's ready, then send back to the PictureThis company to make an actual order. The drawing is mirrored, digitally printed, and the dress is sent to the co-creator. Printalloverme (paom.com), as well, launched a collection of apparel designs for children available for print designers to co-design with their print patterns and for the public to order or co-design it with their own drawings, photographs, textures etc. through online software.

On the other hand, there is different business approach for involving children in the co-design practice in today's textile industry. For instance, in Russia, Natalia Vodyanova, model, activist and businesswoman, has already presented three fashion collections, together with the Russian fashion house Zarina, that were co-



i 29. Printalloverme (paom.com) and Snarkitecture collaboration. The dress is made with pattern created by Snarkitecture for Printalloverme platform.

created with drawings made by students with autism. Collections were called "Fashion with Purpose" and supported the charity organization "Naked Heart Foundation" that helps families with children with a similar diagnosis. The collaboration between the fashion house, "Naked Heart Foundation" and special art center for autistic students is continuing today (2017), launching new collections every season. (Naked Heart Foundation, 2016).

Another social act of co-designing happened in Finland, where local brand, Vimma, collaborated with children during their workshop at the Habitare event (12 September 2015) and co-created collection of pyjamas for the Finnish Children's Hospital based on the children's drawings and concepts developed through the workshop (Design Museum, Habitare, 2015). See image 30.



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Similarly, the IKEA brand invited children all over the world to participate in a contest and draw a toy for a special collection—a part of an IKEA Good Cause Campaign that focuses on children’s rights to play and develop. Two collections of imaginary soft toys, co-designed with the winning submitted designs, were launched in 2015 and 2016, and sold in all IKEA stores. The company donated one Euro per each sold toy to UNICEF, and over 77 Euro were raised for the better education of children in need (IKEA, Good Cause Campaign, 2015). See image 31.

At the same time, there are local makers around the world who make custom toys based on children imaginary drawings. Although, it is not a social act, as with IKEA’s toys, these custom-made unique toys imagined and designed by a child and produced by a maker bring greater satisfaction and create better emotional bonding in the toy-owner relationship. Images 32 and 33 features photos of such custom toys made by different makers.



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Local art-centers also often have participatory workshops, where children can learn how to make their own toys, develop the sketch, cut, paint it and sew their very own stuffed toy.

Besides the social aspect, or the emotional aspect, the participatory approach and co-designing with the public can have a stronger educational purpose. This is true of Vodyanova’s fashion project with students diagnosed with autism, as it helps the art center educate people with autism how to design sketches for patterns and how patterns for fashion can be developed. (Naked Heart Foundation, 2016). Similarly, the fashion conscious Russian brand GO founded and operated by Glagoleva Olya has recently launched its first children collection called “Little ones”. The uniqueness of this collection lies in its co-designing nature. The co-authors of this collection were 10 girl students of one Russian Montessori school. Throughout the year 2016, Olya as an educator



and workshop facilitator, was teaching girls about such subjects as the purpose of clothes, how the clothes are made and by whom, and how we can do it so that it brings only joy and beauty into our world. Through her participatory workshops, girls developed sketches, cuts for dresses, prints and sketches for embroidery. Afterward, the team of GO brand took an active role in the production part of the project. Olya believes that society is a responsible for our environment and wants to influence the development of behavioural norms; therefore, the team of the GO brand developed this special educational course for children of kindergarten age to teach them about clothing production. The course consists of several topics: developing ideas and prototypes, knowing your materials, the loop of production from raw material into a thread, and then into fabrics and clothes, printing methods, making cut-patterns and prints. As a result, little co-authors are becoming models during final fashion show featuring the co-created collection. (Clothes Go, Instagram). See images 34 and 35.

Participatory workshops are gaining popularity in different fields, not only in fashion and textile design, but in this chapter I will briefly describe fashion cases of co-design and co-production and wrap up with examples of public involvement in design practices.

First, a student project and an open collaboration with the purpose to encourage everyone to become active makers of their own wardrobe, a case study by Anja-Lisa Hirscher:

“Make{able} – participatory clothing design with Half-way products. Half-way products offer participants of the workshops to co-design a garment with designer. At these workshops organizers provide a variety of half-made pieces, to be finished according to participants’ creative ideas.” (Make{able}, 2013).



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Hirscher reports that participants of organized events expressed satisfaction from the making process and the achieved results – ready garments, they also enjoyed the creative working environment and the process of learning. Designers-facilitators were challenged to come up with designs of the garments that will be suitable for finishing by any participant with little supervision and will be valued by the co-producers. (Hirscher and Fuad-Luke, 2013: 186.)

This and the next example are definitely educational in nature, not only in terms of making clothes, but also in terms of bringing awareness about the value of clothes, recycling opportunities, and awareness about waste and other fashion industry problems.

The next example of educational public involvement in design practice is Make/Use, a research project led by Holly McQuillan of Massey University (New Zealand). The project suggests the concept of so called user-modifiable clothes that features zero waste cut. All zero waste pattern cut are available for downloading online and printing for users' own use, and also series of workshops were organised where participants could explore different opportunities of creating zero waste garments using Make/Use pattern cuts. (Make/Use 2015.)

The Ready-to-paint case was tested simultaneously with the Make/Use launch, and in the future, pattern cuts from Make/Use project can be co-designed with the little artists' print patterns, or the Ready-to-paint project can implement the participatory workshop approach, and involve the public in the actual making of zero waste garments for children and adults printed with children's artworks.

The last example, one that can potentially become Ready-to-paint partner or role model, is a recently launched business Sprout Patterns, a service that sells sewing patterns directly printed on

the fabric, the pattern cut is already combined with print patterns of the customer's choice. All is printed on demand, pattern cuts are customizable with the prints by different designers, the company uses printing service of previously mentioned American digital printing company Spoonflower. (Sproutpatterns, 2016.) This approach combines together crowdsourcing (designs from designers), mass-customization (basic sewing patterns combined with different print pattern designs) and co-production (while the fabric is produced by the industry professionals, and the designs by designers, the final apparel is cut and sewn by the user herself).

In the future, Ready-to-paint can work under the same model, allowing mothers to get a zero waste cut printed with co-created print patterns that they can further sew by themselves, making this project even more participatory and DIY.

## ***1.6 PUBLIC INVOLVEMENT: IN MUSEUMS***

This chapter will explore public involvement in such institutions as museums to form a better view of the idea that the public's status is changing rapidly on many different levels. Alongside the role played by artists to constantly transform the viewer's perception of contemporary art, museums in their turn became a platform where the dialogue between the artist and viewer takes place. This new sense of public's place in the art dialogue has made museums rethink their mission gradually.

In 1870, The Metropolitan Museum of Art was founded with a statement of purpose as:

"to be located in the City of New York, for the purpose of establishing and maintaining in said city a Museum and library of art, of encouraging and developing the study of the fine arts, and the application of arts to manufacture and practical life, of advancing

the general knowledge of kindred subjects, and, to that end, of furnishing popular instruction" (The Metropolitan Museum of Art, Museum Mission, 2015).

By coincidence, or as an indicator of a trend, a year earlier the American Museum of Natural History was founded and formulated its purposes as:

"establishing and maintaining in the city of New York a museum and library of natural history: of encouraging and developing the study of natural science; of advancing the general knowledge of kindred subjects, and to that end of furnishing popular instruction and recreation". (New York (State). Dept. of Public Instruction, 1886: 116)

So here we see that art museums founded at the end of the 19th century saw themselves as a part of educational institutions and proclaimed their purposes to educate the public by providing access to a collection of art in a same "learning by seeing" manner as a Natural History or Archaeology museums. But as soon after that as a half century, the Museum of Modern Art was founded and proclaimed itself as "a place that fuels creativity, ignites minds, and provides inspiration" (The Museum of Modern Art, Mission Statement). A decade later in 1939, the internationally renowned Guggenheim Museum opened its space for artists and the public declaring its mission to focus on:

"innovation, collecting, preservation, and the interpretation contemporary and contemporary art, and the exploration of ideas across cultures, through dynamic curatorial and educational initiatives and collaborations; with its constellation of architectural and culturally distinct museums, exhibitions, publications, and digital platforms, the foundation engages both local and global audiences." (The Guggenheim Museum, Mission Statement, 2015)



**i36-38.** Different approaches of public involvement in museums. Silent observation or observation with discussion or hand-on experience.

A significant change in these early and later statements lies in the words “engagement and inspiration”. The step from a clear purpose of “preserving and exhibiting” to a commitment to innovative “engagement” became part of the further development of the museum’s mission. To summarize these developing changes in the contemporary art world, I want to cite a very indicative (in my opinion) statement from The Museum of Contemporary Art’s website: “The Museum of Contemporary Art seeks to create a dialogue between the established and the experimental, the past and the present, in an environment that is responsive to the issues of contemporary and contemporary art, while being accessible to a public that ranges from scholars to young children.” (2015)

Today, the development of museum strategies of engaging public continues and in a contemporary world of marketing techniques it is hard to find an art museum that doesn’t provide some kind of public-involved educational or art programmes at their spaces

on a regular basis. What interests me is that a significant part of those programmes is designed for the younger generation. In an interview, Anna Kegeles, art teacher from New York, shares her perception of contemporary role of museums in children’s education:

“I believe it is very important for a child to understand that creativity is an infinite number of correct answers and there is no wrong answers. There is an artistic path that a kid should go through as a young artist. Unlike mothers, showing how to draw the sun, trips to museums and viewing reproductions helps to ask themselves questions, inspires creativity and gives the tools.” (Interview 13 December 2014).

To support my research, I assessed some museums’ online resources for appearance of educational approaches and public involvement techniques. Through this assessment, I came to believe

that MoMA (The Museum of Modern Art, New York) takes a leading role in the evolution of such programming. My interviewee Anna Kegeles agrees with me that it tends to be the most progressive museum and has run its “MoMa Art Labs” for almost a decade already. As is stated on their webpage,

“MoMA Art Labs offer a gateway to the collection, allowing visitors to go beyond looking and talking about works of art to engage with art in new ways. In these interactive spaces, kids and adults experiment, play, and create as they make connections between their own creative explorations and the ideas, tools, and techniques of contemporary and contemporary art”.

Simultaneously with its educational purposes, the museum gives an opportunity to have a hands-on experience of creation and experimentation. (The Museum of Modern Art, About MoMa Art Labs, 2015.) Besides, a full range of workshops for different ages are provided in the museum space throughout the year, in addition to which some advanced mobile applications were developed to

give visitors a more interactive experience of art in the museum and inspire them to create their “own art”. (The Museum of Modern Art, Apps and Websites, 2015)

Even the Metropolitan Museum of Art, which tends to be more conservative, nowadays provides a full range of programs for public, many of which are family and child oriented, in the descriptions of various family programs works produced by children and public on the workshops are called artworks and works of art, what makes children little artists (The Metropolitan Museum of Art, Family Program, 2015).

In Finnish museum scene, family programs and workshops for visitors appear as a part of a daily museums’ routine as well. In 2015, the KIASMA Museum of Contemporary Art stated that its purpose lays in educating the public, while in fact similar to other more conservative institutions in Finland, but it does provide a variety of participatory workshops for the public and younger generation, during which people have an opportunity to have a hands-on experience in art processes (KIASMA, Museum of Contemporary Art, 2015). The Ateneum Art Museum that houses the collection of the oldest art organization in Finland, the Finnish Art Society, provides an even wider range of workshops and programs that combine traditional educational approaches and more experimental ones. Following Susanna Pettersson’s thoughts about National Museums in Finland, one can conclude that Finnish museum scene is developing rapidly in the same manner as it was discussed previously with the New York examples. On her report, Pettersson states that, since opening, “the National Museums of Finland have been audience-driven, educational institutions, whereas the Natural History Museum has focused solely on scholarly activities.” The development of the Finnish school system also provided direct links with the youngest audiences. Since the earliest days, the clear role of the art collection has been “to provide models







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i39, i40. Contemporary art and modern children in museums around the world.

for future artists”, and the museum opened its doors to the public with special attention to working class and children. Over a century, national museum organizations have reacted rapidly to changing time and transformed their self-vision from being a place that houses a collection to the point where the new staff is constantly researching and looking for new solutions for interacting with the audience and telling stories of presented collections through new media. (Pettersson, 2011: 280-282.)

One might state that such public-involvement practices in the museums are just a result of new marketing techniques, as is the case in other fields of the commercial consumerist world. And it this can be partly true; museums do need to evolve to ensure their future existence and prosperity.

***“Inviting young audiences into the museums is regarded as an investment in the future”***

(Pettersson, 2011: 280).

Anna Kegeles, also working as a museum guide, supports public and children involvement in museums by stating in her second interview, that museums strive to ensure that a greater number of people are interested in art and the most obvious route to this goal is through the next generation (Interview 27 October 2016).

But no matter what the reasons were for such progression, it nurtured a very different generation of museum-goers, and more importantly, continues to nurture. Children who were brought to the museums to very silently observe the masterpieces get a different perspective from the children who are allowed to run, have fun, draw, create and experiment in the museum space, where their works called “art” and where they often named “little artists” themselves, and moreover, who can see that artworks potentially are the something they can make themselves. See images 36-40.

For instance, the content of popular Instagram social media account @rockthatmuseumkid is indicative of the contemporary presence of children in museum world, showing not only children’s

involvement but also the artworks that children can observe in museums nowadays. (Rockthatmuseumkid, 2017) See images 39 and 40.

For more support to the above idea, I want to appeal to one of the visuals that MoMa used to promote one of its multiple family workshops called “Paint!” (MoMA, 2015)—the artwork by one of Abstract Expressionism’s pioneers, Joan Mitchell, who is known for her quote

*“the painting is just a surface to be covered”*

and her work expresses this belief so well that visitors of the website can actually think that the visual was produced by a group of children during this particular family workshop. See image 41.

As described on the website, in this workshop designed specially for four-year-olds and their adult companions, MoMa suggests using fingers, brushes, and other materials to explore making marks with paint and to be inspired to create visitors’ own works of art. “At the end of the program, families can search in MoMA’s galleries for different ways that artists use paint” (The Museum of Modern Art, Workshops). Yes, the museum does follow its educational mission but at the same time public leaves the museum with a



i41. Joan Mitchell Ladybug. 1957. Oil on canvas. 6' 5 7/8" x 9' (197.9 x 274 cm). © Estate of Joan Mitchell



clear sense that they can create and they can make art themselves. Furthermore, youngsters learn that what they create is valuable and that they have their own unique “artistic vision” that should be respected by their parents from an older generation and even more, their “art” can actually become a part of real museum installation, which only proves its value in their eyes. For example, KIASMA collaborated with art-students from AALTO University to bring new mass-participatory activities to the museum and the public:

“In the implementation I had to take into account the huge number of students (children) in relation to the fact that everyone should be able to create something significant of their own,” says one of the student-organiser. (Happonen, 2014.)



**i42.** Kiasma Museum (Helsinki, Finland) participatory art installation. Participants were local school-aged children. Photography by Noora Happonen, 2014.



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**i43.** Image created by participant’s movements using Camille Utterback’s alternative interface installation, 2004.

**i44.** Process of interactive drawing, “Untitled 5” by Camille Utterbacks, 2004.

**i45, 46.** Process of interactive drawing .with interactive drawing installation “Loplite”, 2017.

At the same time progressive museums are already equipped with some technologies that the public can use to create artworks in their own way. Digital media provide a direct opportunity for the public to get creative and after preliminary exploration of how artists use line, shape, and color, discover artists’ processes and inspirations, allowing further creation of actual digitalized artwork inspired by MoMA’s collection. (The Museum of Modern Art, ART LAB iPad APP, 2015). In last few years, media installations that invite the public to participate are becoming more and more popular.

Aronson, contemporary philosopher, stated that museums nowadays have become a place of entertainment, rather than just a preservation archive, (2017) and digital technologies are providing newer opportunities to increase the quality of entertainment.

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Kinetics, robotics, alternative interfaces, algorithms and new media possibilities have broadened the number of art projects in museums that involve public in creating the final outcome. Different kinds of digital installations are concentrated on participants' movements and its representation in colourful pictures. Some of the created visuals intend to be more abstract, others to be guided precisely by participants.

For instance, Cammille Utterback's alternative interface installation called "Untitled 5" (2004) is a dynamic, abstract, animated image that is generated in response to participants' movements and gestures in an installation space monitored by an overhead camera. The traces of past movements become part of the digital abstract image projected on the wall (Wilson, 2010:138). See images 43, 44.

Rapid technology development has led to the creation of advanced new media art installations. Interactive drawing installations were and continue to be developed by different companies. One example is "Loplite", an interactive and collective drawing installation, distributed by Digitalarti in collaboration with Muchomedia company:

"Using flashlights, light sticks and laser pointers as "brushes", one draws on the screen by pointing the light to the wall or by manipulating the stick in front of the wall. The shape and the location of the light manipulated in front of the wall define the shape of the projected line. As the drawer moves in the space facing the screen, the gestures are also a part of this creative process. The line becomes the moves reflection. Moreover, the LopArtHD software enables to animate all the lines, to create moving drawings, and original spectacular animations" (Hoplite, Interactive Light Drawing, 2017). See images 45, 46.

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i47, i48. Visitors of Cooper Hewitt museum share their experience through social media. Digital technology provides visitors with opportunities to create repeated patterns and have it projected on the surrounding walls and themselves.

But the project that has the closest connection to Ready-to-paint project in terms of visual representation and meaning is an interactive space in the Cooper Hewitt museum that is called The Immersion Room. The installation uses digital and projection technologies not only to present the museum's collection of design wallpapers, making it possible to project repeated patterns at full-scale, floor-to-ceiling on the surrounding walls, but also to provide visitors with design experience, giving the opportunities to digitally sketch their own designs, adjust the colors and manipulate repeated patterns, and see them projected on the walls around the person and even on person. (Cooper Hewitt, Immersion Room, 2017.) See images 47, 48.

Other design activities available in a museum that I tried personally were happening during the exhibition "Anthology of Finnish Fashion" at Design Museum, Helsinki, Finland (5 June – 20 September, 2015). Visitors could first browse and learn how the development of Finnish society has been manifested through fashion,

see the outstanding apparel creations of Finnish designers and brands, and then take part into a hands-on workshop, where they were permitted to hand-draw on designer's outline sketches. (Design Museum, Anthology of Finnish fashion, 2015).

Similarly, there are many kinds of hands-on workshops in almost any museum nowadays, that invite visitors to participate, create and try different technologies and painting techniques. The outcomes created through this experience can be further used to make meaningful products for participants and preserve the memories of their visit to the museum. This open possibility will be discussed in the last chapter of this thesis. There, I'm going to suggest how to connect the creative process of an end user with the fashion production line in order to benefit all participants: fashion, museums (as a transition platform), and most importantly the end-user, providing: the first with a sustainable approach; the second with new marketing suggestions; and the last (but not the least) with a meaningful experience and long-lasting souvenirs.

To conclude, the overall message of the discussed facts—such as transformation of contemporary art history, the change in perception of the user's role through time, and the consequent transition of museum institutions, along with changes in business and design practices—the message is that these transitions brought us, contemporary society, to the stage where the public, viewer or consumers take on the participatory role, not only in art scene but in fashion scene too. And children are given the significant role in these new user-centered realms.

## 2 FASHION & CHILDREN

### 2.1 PATTERN TRENDS

Digital printing technology allows mass production fashion brands, as well as smaller brands, to print fabrics with artworks that have any amount of colors, gradients, textures and photographic depiction, diversifying what's available every season. Designers are playing with textile patterns and prints to create a range of new designs.

In recent years, trends seem to favour artistic prints: patterns that simulate contemporary art or drawings by children, or use real drawings by children, abstract, rough painterly effects, or naïve technique—different variations pop up in different brand collections.

Further, there is a collection of images from various brands that visualize my point of view. See images 50-70.

These examples help to show that print patterns co-created with artworks by children is on pace with existing fashion trends, such as wearable art, abstract art and art by children.

### 2.2 CHILDREN CLOTHING INDUSTRY

Currently, the children's wear market is one of the most profitable segments in the global apparel industry. Estimated to hit a value of 173.6 billion dollars by 2017, the market was not even been affected by the 2008 crisis of the global economy (Ozbay, 2014.) Supposedly, the market of children's clothing is stable and growing due to parents having children later in life and grandparents having more disposable incomes at hands (Kidswear fashion market report, 2016).



**i49.** Dolce & Gabbana's Spring 2015 Collection features prints made with the drawings by designers' young relatives.



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**i50.** Bulle de Savon ink print shirt-dress from Ambidex Japan online shop.

**i51.** Catwalk, EDDA AW/16 by Edda Gimnes.

**i52.** Painted top, Preen by Thornton Bregazzi, Fall 2012.

**i53.** Look from Vika Gazinskaya SS/12 by Vika Gazinskaya.

**i54.** Painted top by artist and etsy seller Kindah Khalidy, 2013.

**i55.** Daniela Gregis SS/14

**i56.** Detail photo for Dior Homme SS/15.

**i57.** Freya Dalsjø SS/15

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i58. Detail photo for Antoni and Alison SS/13.

i59. CÉLINE, Summer 2014.

i60. Detail photo for Dior Homme SS/15 catwalk.

i61. Jennifer Lawrence wearing Dior dress.

InStyle Magazine's look of the day for May 19, 2014.

i62. Detail photo for Marc Jacobs Spring 2016 Ready-to-Wear collection.

i63. Street style photo, February 2014.

i64. Cédric Charlier Resort 2014.

i65. Daniela Gregis - SS/15 Catwalk.



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i66. Kenzo Spring 2006.

i67. Angelina Jolie's wedding dress by Atelier Versace features drawing of her children, 2014.

i68. Pattern by artist Lorien Stern on shirt by Printalloverme brand.

i69. Look from Little Pushkin brand capsule collection 15/16.

i70 . Hellen Mirren in Dolce & Gabbana dress from Spring 2015 Collection.

“At this point, Europe and the U.S are the major consumers of the global children’s wear market. And the growth in double income earning families and working population is shown as the leading reason. This reason is also expected to cause apparel market to have more gains for the prospective period.” (Ozbay, 2014.)

After all, with such rising popularity of children’s wear and most importantly the role of children in the contemporary realm, it is important to start communicate sustainable values through available streams, and their clothing is one of it. Thus, Ready-to-paint prototype business model aims to be a part of slow-fashion segment and promote its values to future owners of co-created garments, children as well.

### 3 SUSTAINABILITY&CHILDREN

As stated previously, this thesis tests a suggestion for fashion model and the project aims to be considered a part of the slow fashion movement. The slow fashion process is at its core; it “challenges apparel firms to make the effort to include sustainable, environmental, and ethical practices into their designs, to select production methods that emphasize quality, craftsmanship, and experienced labor, and to educate consumers so that they can play an active role in making informed decisions regarding their apparel selections” (Pookulangara, Shephard, 2013: 3-4). See also Figure 1, page 67.

Decisions about design and production processes will be discussed in Chapters 2, but this chapter will be focused on the consumer and educational context of the project. I intend to explain why involving children is one of the sustainable decisions of this thesis and the project overall.

Talking about sustainability, it is crucial to cite one of the first official definitions of the sustainable development concept that was presented by World Commission on Environment and Development in the 1980s:

***“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”***

(Brundland, 1987: 41).

Based on this definition, I linked my design work and all sustainable intentions of the project to work with children. Simply saying, it is so because today’s children are that “future generation” for whom we need to meet their needs and provide them with opportunities to live their lives in the sustainable way.

As we know “a society may in many ways compromise its ability to meet the essential needs of its people in the future.” (Brundland, 1987: 42) Although the vast majority of people would agree with the sustainable development philosophy, “our individual behaviour is often in contrast with it. We tend to avoid small and large sacrifices that a coherent approach would call for, believing that “others” should change their behaviour, build infrastructure and introduce measures for the purpose of achieving this objective” (Pecci, 2012: 8). If we imagine that this is unavoidable human psychology, then I suggest that these “others” who implement change should be designers, industry people and entrepreneurs. They can introduce new standards and involve the customer in this new world of sustainable consumption, in my case, this means providing them with a valuable lesson about owning clothing, that was made ethically, and has personal meaning and is therefore embedded with emotional attachment.

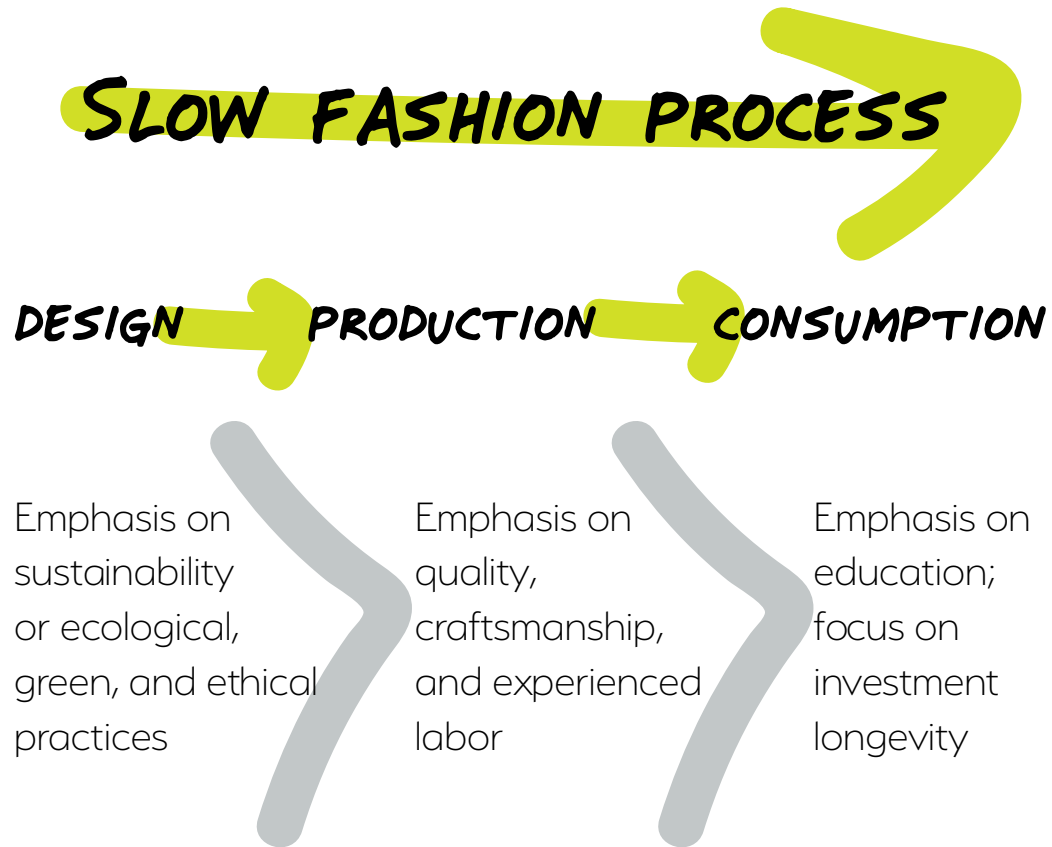
If we want to raise a new generation of consumers who support and lives according to sustainable development guidelines, then we need to involve our children in the process, they are the next generation. We need to involve them in the design stage of consumption, make this experience personal, and then give them the opportunities to enjoy the outcome of the process. As we know, “a child’s development and learning occur in and are influenced by multiple social and cultural contexts. The brain learns through experience” (Sprenger, 1949: 3). Moreover,

*“early experiences have both cumulative and delayed effects on individual children’s development”*

(Sprenger, 1949: 3-4).

Creating a positive experience in childhood, an experience of a co-creation, of owning clothes that have a personal story, of knowing the origins of your clothes, and knowing about waste or no-waste production possibilities, has a potential to form good habits for a child’s consumer behaviour in the future. Especially, if the outcome (clothes) that were co-created using their artworks will be preserved in family albums and saved for future generations.

Furthermore, this project is targeting the parents of little artists, due to their direct influence on their children’s lives. Parents act as crucial examples and providers of their experiences for children in their early years. Parents make choices on what food to feed to their children, also parents are the ones who make consumer choices in apparel for their children. All respondents in my study group of participants said that the mothers are the ones who make a decision on what clothes to buy for their children.



**Fig1.** Framework model for the slow fashion process by Pookulangara, Shephard (2013: 3-4), edited and redrawn by author of this thesis.







## CHAPTER 1

# USER

This and following chapters will be focused on the design and production processes of the project, along with the particular qualities of co-creation used in my design and production practice. There I will discuss the practicalities of working with a group of participants and different roles in the process of co-creation. I tell short stories about the users I chose for my research and the outcome we achieved together. I report on the production decisions that were made alone by me as a designer and responsible person for the whole process and outcome, in particular in the designing of a textile and clothing collection, making choices between printing technologies, pattern cut methods, textiles and etc. These discussions of my design and production processes will deepen the relationship between production and theories discussed in previous chapter.

During the process of this thesis, only the first set of products was created, opening a possibility to learn from knowledge gained from these first tests and the feedback from early adopters that are my study group of participants and followers in social media accounts of the project.

# **1 ROLES OF THE USER**

This subchapter is addressing the subject of user's position and roles in the production and practice-based or constructive research parts of this thesis. The topic of co-creation and its different aspects were discussed previously in the Chapter 0.5 and here I will report only on the matters related to my practice. By user, in this part, I mean mainly mothers, fathers and their children as well. When saying "user's drawings", although I do mean children's artworks, and these legally belongs to their parents.

Initially, I made a decision to invite the end-user to the creation process for the purposes of value co-creation, consequently adding value to the end product – designed apparel. Seppä and Tanev (2011) note that the participatory approach in value co-creation provides companies with various options to invite customer in different stages of innovation lifecycle, that leads to a greater potential of user-driven innovation —and I agree. However, integration of users in the co-creation process is not an easy task and projects are bound to face challenges. Heterogeneity of users, defining roles, selection and recruitment of participants and managing the users' role in co-creation are the key challenges that project may face. (Agrawal, 2015: 147.)

The working process with the group of study participants made this thesis significantly longer and time/money/effort-consuming one when compared to a process where research and final collection is produced by designer without involving third parties. Especially, working process with children requires additional logistical arrangements. Nonetheless, the feedback gathered from participants, young and adult, both gave a valuable source of information on whether the decisions made were appropriate for the chosen group or the design and production practices need further corrections. Basically, in the set of roles—including, resource

sourcing, worker (co-producer), buyer and beneficiary (user)—in my practice, the participants take on the resource role (original drawings-artworks) and beneficiary (user), skipping the production part completely. None of the participants were charged for the products they received, the agreement between me and participants stated that they agree to participate in the project by granting to the author full rights to use the drawings by their children and providing their feedback along with a photo diary of the first months of the product use. Therefore, I don't consider users as buyers in the scope of this particular thesis, but in the future of the project, users do have a potential to occupy the buyer's role.

Based on classification made by Agrawal (2015), I outline the roles of users in my thesis process as following:

## **- CO-TESTER**

Users are involved in the testing stage of first prototypes before being introduced to the market. User's feedback is valuable for further development of the product and the system (151-152.) Moreover, by providing their feedback, participants of this thesis made it clear how well the hypothesis is working that was formed at the beginning of the project.

## **- CO-PROMOTER**

Lead users are the ones who could promote the product, the service or the brand through their personal blogs, social media or word of mouth. Their opinion could influence the opinion of future customers (148). Similarly, participants of this thesis were sharing their feedback through the streams of their social media accounts, therefore more people were sharing their opinion on the product and expressing their willingness to order in the future.

### **- CO-EVALUATOR**

Often, humans enjoy the process of evaluation along with authors of the project. It also generates free publicity that turns users into a project's ambassadors when they spread the idea within their social group, becoming first adopters or inspirational consumers. Ideas developed through co-evaluation are not always meant for implementation. These ideas need to be further analysed by project organisers. The most important point that emerges from the user being a co-evaluator is the fact that I get a chance to understand the tastes and preferences of the customer regarding my ideas and can plan its future value proposition accordingly. (151.)

### **- CO-CONSUMER**

The consumption process in co-creation presents an opportunity for the customer to create meaning, experiences and value for oneself as well as for others. Etgar states consumption process can be divided into three sub categories: pre-use, during-use and post-use consumption phase. The consumption process can facilitate meaningful psychological, social and cultural experience. "The pre-use consumption phase involves mutual identification of the user and designer, producer as actors in the process. In the during-use consumption phase, the user as a practitioner creates value by following conventional practices while simultaneously introducing new ones. The post-use consumption process comprises the experiences undergone by the user, and the sharing of those experiences with fellow customers and the producer." (in Agrawal, 2015: 149.)

Even though the use stage, technically, is solely the users', the user will also make final decisions on the post-use stage, but the producer and designer get involved in these stages by making all the decisions during design and production stages: by putting all the needed care information on the labels; by writing all the involved parties' names on the label; by keeping the user well-informed;

by doing co-created design; through zero waste production—that will eventually be taken into consideration when the user will be making decisions about the disposal of the garment, or saving it for future generations or as a personal souvenir.

And lastly, the most important role of the user in this project is:

### **- CO-CREATOR**

All final objects (apparel and toys) are initially designed with user's artworks. In the following subchapters, I will present the original artworks that were sent to me and my further design work with it, along with the outcome. But it's important to understand that none of the patterns would have been created if there were no children to work with. They provided the resource for the future design work, becoming co-creators in the design process. Because of this first encounter with the user based on their drawings, the additional value of the produced goods was created. Therefore, the participants became value co-creators.

In conclusion, the role of the user (participant and consumer) in this project and business model is irreplaceable, not only because he or she is the end-receiver of the products this project is designing and producing, but because the user is the one inspiring the process, starting with the design part. Consequently, after building the hypothesis of the thesis and approving the thesis subject with the Head of Department, the following step was to recruit the group of research participants with whom all further work was done.

## 2 STUDY PARTICIPANTS

In this subchapter, I introduce people that formed my research group and how they related to the group of end-users of the service I developed through this constructive research. Forming a group of research participants or study participants for human-based research is partially similar to forming a focus group. I find that a study group can be characterized similarly to a focus group, it is advised to look for commonalities in the group, but provide variation among participants to allow for contrasting opinions (Krueger, 2015: 66). In this project, the commonalities are: gender – female, women were invited to participate; family characteristics – mothers to daughters of preschool and school age; online presence – all participants have social media accounts where they write about their and their children lives. Other characteristics vary, such as: occupation, mother's age, religion and political beliefs, place of residency, education, interests, etc. Another characteristic in common is spoken set of languages: English and Russian. This decision was made by designer and researcher, myself, because I believe that two shared languages between researcher and participants will allow me better understand participants' system of meanings, thoughts, views, and therefore I was able to study them deeply. Moreover, their children's first language was also Russian, therefore, they could speak freely with me too.

Usually the suggested size of the focus group is 10 to 12 people. Krueger, in his book on focus groups, believes that this size might be too large for non-commercial topics, such as this thesis research. He suggests that preferable size for non-commercial projects would be five to eight participants, moreover smaller groups (four to six participants) are even easier to recruit and study. (2015: 67-68.) In addition, the plan was to co-create the print patterns for the apparels and then make at least one final apparel for each of

participants, mothers and daughters, that means that the amount of working hours for the designer, cutter, sewer —myself—should be considered, along with the expenses for the production and delivery.

As a result, after approval of thesis topic in 2014, the first letter of invitation to participate in the practice-based research was sent (5 October 2014) to six women, mothers to daughters of pre-school and school age, located in different part of the world—Canada, USA, The Netherlands, France, Russia, Germany. I chose these women due to the following factors: some of them I met once or twice in real life, some I knew only by following their social media accounts, but it was important to me to invite those who inspired me by their attitude and look, and who I think can be trusted, and who are able to give an honest feedback and criticize constructively. Moreover, they are open-minded, interesting, good looking, fit, they love to travel, adopted different cultures through their immigration experience, and they love their children. In my first letter, I wrote these statements to explain why they are invited to participate. Also, in that letter I presented the core statements of the thesis, briefly described my professional background, and then the project requirements and incentives.

The requirements were:

- reply to all the questionnaires and surveys throughout the research timeline
- to assist in organization of interviews with their children
- collect, scan and send the artworks by their children
- provide body measurements
- provide feedback during the study process and afterwards
- ability to separate their opinion from their child's opinion
- to send photographs of themselves in the ready garments

- to give official permission for use of the drawings, their answers in the surveys and interviews, and their names in the final thesis.

The incentives for their time, sharing of feedback, and making the final photographs are: the garments co-created with their children's drawings for them and their daughters. As agreed in the beginning, these garments will be theirs to keep for their lifetime and beyond.

As mentioned, I sent six emails with this proposal hoping that at least some would respond and agree. All six responded agreeing to participate in the research and make an effort to provide me with all the information needed and with their daughters' current artworks.

Further, in the next pages, are the profiles of these families who became research participants in this study in autumn 2014 and received their co-created garments in summer 2016 and still own them (Spring 2017 and hopefully beyond).

### 3 WORKING PROCESS

In the table 5 (after participants profiles) the processes where research participants were involved are highlighted (in yellow). In short these are the stages of forming the group of research participants, collecting existing drawings of children, drawing activities for children with the given task, use stage of the final garments and goods, and follow up interviews, surveys, questioners.

Initially, it was planned to have three sets of tasks regarding the children's drawings:

1. The first task was to collect existing drawings of their own choice and preference. Examples were given, subjects such as: abstraction, creative freedom and expression, separate

elements, animals, objects, stories. Minimum 10 drawings, no maximum. To scan the drawings with 300-600dpi resolution in TIFF or JPEG format and send to the designer via Dropbox app.

2. Second set of drawing activities was suggested right after interviewing the children on the topics such as: what is art; what are their favourite colors; what kind of pattern of dress they would like to have if they could draw it themselves.

- Objective drawing: children were suggested to draw objects or things they like. Examples were given, subjects such as: "fruits/vegetables, birds, flowers/plants, animals, fishes, butterflies, rocks or crystals, houses, automobiles/ bikes/ transport, people, your favourite things, hearts, list of stripes can be made, or list of dots or imagine anything you want". Furthermore, simple explanations on how patterns are made were given, and that it is best if it's drawn on white paper and that a variety of objects is appreciated. Drawing materials were left to the children's choice.

In addition to that, mothers were given choice of three activities to organize for their children, to have a variety of options for designer to work with:

- Abstractions: use a large white sheet of good quality paper, turn on the music of their choice, tell their children that sometimes an artist can draw his/her mood or emotions or the music itself. To provide children first with only one instrument and color; second time, with sets of instruments; and third with different colors and a variety of instruments.
- Museums: to draw in any museum of their choice. This can be during a drawing class or workshop organized by the museum, or they can take drawing materials with them and a child can draw on her own.
- Textures: to come up with an idea for the game where a child fills a whole list with dots only; another list with stripes only; and then similarly makes a set of drawings with a variety of textures.



All the drawings that will be made through these activities were suggested to be scanned or photographed in the same manner as the first ones. (Interview and tasks for children, April 7, 2015)

**3.** The last set of drawing activities was supposed to be done right after the cut of the zero waste dresses was finalized and digitalized. The initial plan was to send a picture file with the dress's cut. Mothers would print this file and give it to their children to draw on. These drawings would form the last set of materials for designer to work with.

In following pages the drawings sent by mothers are presented with no editing from designer. The first task (sent existing drawings with no preliminary directions) was completed by all participants; the second by a lesser number; others reported that their lives with children are too busy to organize these special drawing activities and that they would appreciate if they could skip it and just send what they already have. Thus, the decision not to send third task was made.

After collecting the artworks, measurements and the first interview with the children, the process of design work was started and didn't include the participants, neither the mothers nor their children. The next stage, in which the participants were involved again, was the moment when the co-created objects and garments were finished and sent to their co-creators. More on this is in the chapter called Together. After they received their incentives, they were asked to send all the photos they made wearing those garments or using the objects. The legal forms of agreements on using their names, photos, answers and most importantly, artworks were sent to the participant the following autumn and eventually signed by all the participants. At the end of the year 2016 (half a year later after last garment was sent), the follow up interviews,

questioners and surveys were sent to all the adult participants. All participants except one replied, including three fathers who received additional co-created garments to use.

The use of the garments and co-created objects is continuing, but everything that happens past the month of February 2017 is beyond the scope of this thesis and is solely the business of garments' owners.



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## **ELISA MIRLITON**

Mother, photographer.  
Originally from Russia, lives in Paris, France.  
Speaks Russian, French, English  
Year of birth: 1985  
Loves photography, museums, psychology, sailing and skiing.

## **SOPHIE M.**

Daughter, student.  
Speaks Russian and French.  
Year of birth: 2009



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## **ALBINA ITSKHOKI**

Mother. Originally from Russia, lives in Princeton, USA.  
Speaks Russian, English  
Year of birth: 1982  
Loves her family, cooking, travel, blogging.  
Her husband Oleg participated in the study too.

## **LIZA I.**

Daughter, student.  
Speaks Russian and English.  
Year of birth: 2010



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## **ALBINA KLIMENKO**

Mother. Originally from Russia, lives in Montreal, Canada.

Speaks Russian, French, English.

Year of birth: 1978

Loves writing, photography, walking and making things by hands.

## **LIA K.**

Daughter, student.

Speaks Russian and French.

Year of birth: 2004

## **MASHA K.**

Daughter, student.

Speaks Russian and French.

Year of birth: 2010



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78



## **KATYA STAVITSKAYA**

Mother, illustrator, stylist. Originally from Russia, lives in Berlin, Germany.

Speaks Russian, English, German.

Year of birth: 1983

Loves styling, travelling and restaurants. Her husband Oleg participated in the study too.

## **SASHA S.**

Daughter, student.

Speaks Russian and German.

Year of birth: 2009

## **KIRA S.**

Daughter, pre-school student.

Speaks Russian and German.

Year of birth: 2011



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## ***IULIA NIKITINA***

Mother, coffee connoisseur.  
Originally from Russia,  
lives in Amsterdam, the Netherlands.  
Speaks Russian, Dutch, English  
Year of birth: 1985  
Loves coffee, travelling, shopping.  
Her husband Dima participated in the  
study too.

## ***SOFIA N.***

Daughter, student.  
Speaks Russian and Dutch.  
Year of birth: 2010



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## ***ELENA KOVYZINA***

Mother, graphic designer.  
Originally from Ukraine, lives in Toronto,  
Canada.  
Speaks Russian, Ukrainian, English

## ***SOFIA S.***

Daughter, student.  
Speaks Russian and English.  
Year of birth: 2011



**TABLE 5**

Process	2011 Autumn	2014 Summer	2014 Autumn	2014-2015 Winter
First brainstorm with group in Innovation Camp course				
Relocation to Vancouver, Canada				
Production studio set-up				
Thesis Plan Approval				
Active reading stage, Literature review				
Research participants recruitment				
First set of drawings from research participants (no preliminary tasks)				
Interview with children of research participants (audio-video)				
First Interview with art-teacher and consultations				
Measurements of research participants				
Drawings with preliminary task				
Print-pattern development from children drawings				
Printing tests with different companies				
Local printing company - sponsor agreement for printing and fabric				
Printing and fabric tests with Sponsor				
Zero-waste prototype development				
Printing final zero-waste garment-cuts with Sponsor				
Sewing				
Garment's photoshoot with models				
Research participants got their garments and tests it				
Follow up interview with art-teacher				
Legal forms and agreements with research participants				
Interviews and Questionnaires for adult research participants				
Cyberspace observation of practices and users				
Writing				
Thesis Presentation				

[illegible]

## 4 USER OPINION

As was previously mentioned, participants of the research went through a series of interviews, surveys and questionnaires. Along with use of these classic research methods, open-ended friendly conversations were conducted through social media channels and the mail. Users also posted their feedback and photos on their personal blogs and social media accounts on their own initiative, sharing their opinions on the final outcome and the project overall. In the mid-term of the project, a social media account on Instagram was created. There, the process and the outcome were shared with the open public. Through this channel, additional feedback from users and public was gathered.

It is important to consider that the major part of the process related to collecting user opinion was conducted after the use of the ready products had started. Therefore, the interviews and such were not used for making decisions related to the design and production. Only one kind of interview was conducted prior to design stage: video or audio interview with children. Its purpose was to introduce children to the idea that their drawings can be used for creation of their dresses and a garment for their moms. Their opinions on this matter were asked, as well as on the matter of how they would like it if other children or adults can receive products using their drawings. The same interview was focused on the children's perception themselves as artists and related questions about their drawing activities. Questions were about their favourite color and what kind of dress they would imagine for themselves and what kind for their mothers. Nevertheless, their answers on these particular questions were not taken as strict guidelines for the design stage. In some cases, the designer's view has intersected with their opinions, in other cases, it was different from what they said; it all depended mostly on the drawings the

mothers have chosen and sent to the designer, and the designer's taste and formed opinion of what will suit each one better, based on online observation of the particular families.

The follow up process of collecting feedback consisted of:

- Structured interview for adult research participants.

This was sent at the end of 2016, and three out of six participants replied to all questions through January 2017. The interview was focused on their personal perception of themselves, their opinion on contemporary fashion and their consumption habits. Moreover, they were asked to share their final evaluation of the project and the outcome they received. Furthermore, a set of questions on their perception of art, artists, and the value of art and museums in contemporary world and their lives was asked. It ended with questions related to their opinion on children's involvement in the art scene, museum visits, as well as what kind of design corrections they do consider appropriate in their children artworks.

- Survey for mothers with questionnaire, topics: Mothers' zero waste clothing.

Survey sent after approximately six months of usage. Participants were asked to assess the performance of the garment, quality of fabric, cut, fit, color and such (on a scale of from 1 to 5). Additional questions were posed on their consumer habits, price range for similar garments, their wardrobe preferences, what influences their shopping decisions, what are their values; if they are comfortable with the fact if similar clothes or other garments co-created with their children will be available for open sales; and most importantly, questions on their relationship with the new garment co-created with their child's drawing, their plans for its future, and such. These questions helped to evaluate the quality of the design

and production, and the emotional attachment between user and clothes, and if this was developed through time or right away. Four out of six participants replied to the survey.

- Survey for mothers with questionnaire, topic: Children's zero waste clothing.

The survey sent as a set with the above. Mothers were asked to assess the quality, fit, fabric, cut and such on the same scale basis as in adult survey. Additionally, questions about their values and preferences while choosing clothing for their children were posed; expectations and predictions about the future of the garments when their children will grow out of them; the reaction of their children and their selves on the outcome; the relationships between a child and a garment, and such. Five out of six mothers replied.

- Survey with questionnaire for owners of the scarfs.

Similar to the above, the survey included assessment of the print, fabric and sewing quality, its performance. Additional questions on an appreciation, use and plans regarding the scarfs were addressed. Two out of three replied.

- Survey with questionnaire for adults, topic: co-created calendar and toys.

The survey consisted of assessment of the quality of toys and their performance through time, together with questions on how the toys were received by children; how parents liked them; how they play with it, if they do; what is their vision about the future of the toy. Parents were asked to share stories related to the toys and their child's interaction with it, and describe their relationships and assess emotional attachments towards it. Additionally, questions on consumption habits and values were asked. The calendar went through similar assessment. Five out of six participants replied.

- Survey for fathers with questionnaire included.

Three fathers of little artists-participants received underwear co-created with their daughters' artworks. After a year of use, they were sent a survey to assess the performance of the garment, quality of fabric, cut, fit, color and such (on a scale of from 1 to 5). Questions were asked about their opinion of the project, result, how much would they spend for such underwear, plus additional questions on their consumption habits, and if they are comfortable with such underwear or other garments co-created with their children being available for open sales. Three out of three participants replied.

As a general rule, every adult participant was asked to assess every garment or object she/he received and do so for the garments and objects their children received. The focus of the assessment was first on the qualities of the created objects; secondly on the relationship between new owner and the clothes/objects; lastly, questions addressing the basic consumption habits of the participants. Separate interview was created in order to give a possibility to share opinion and views on related subjects with more freedom. The results of the assessment and main points of received feedback will be discussed in Chapter Together.



## LIA 10 (NO DIRECTIONS)

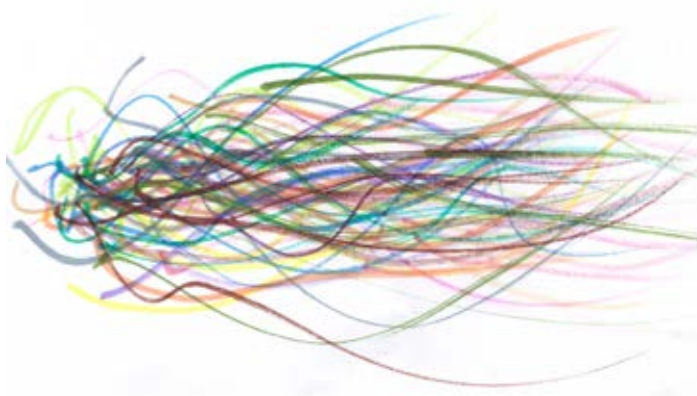




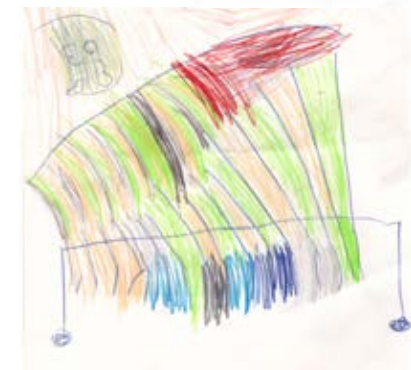


LIZA 4 (NO DIRECTIONS)





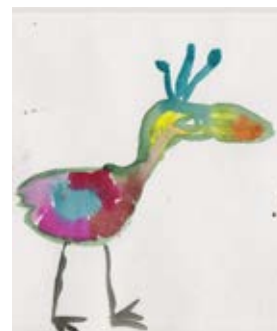
# MASHA 4,5 (NO DIRECTIONS)



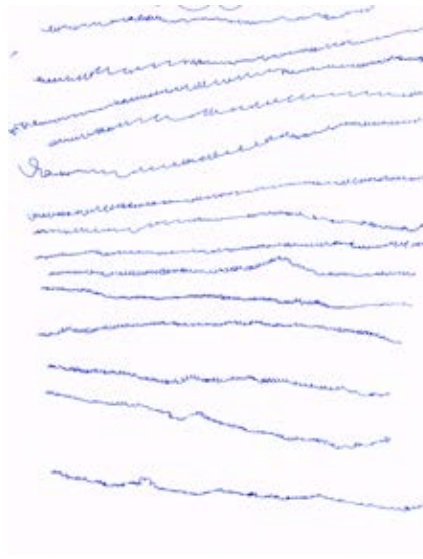




## SASHA 5 (NO DIRECTIONS)







## KIRA 3 (NO DIRECTIONS)

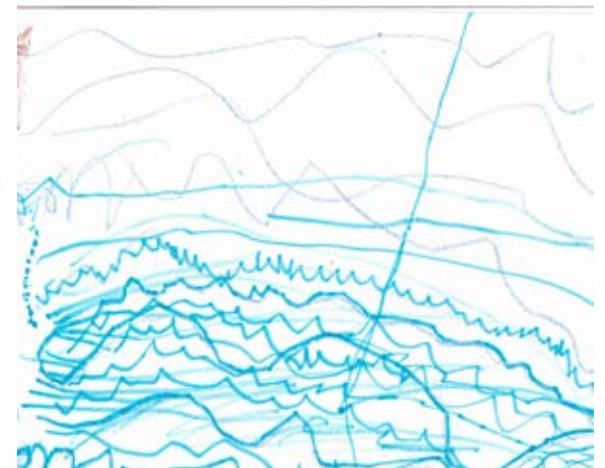




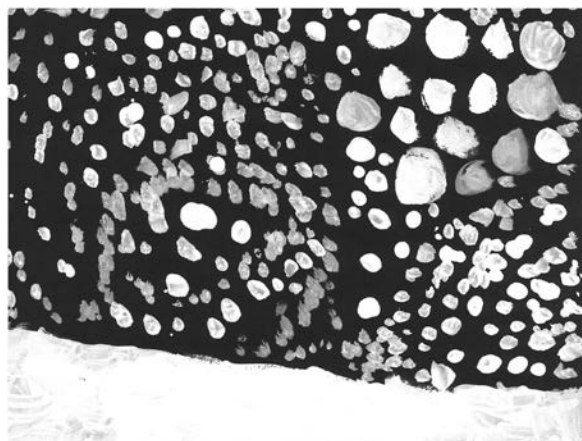
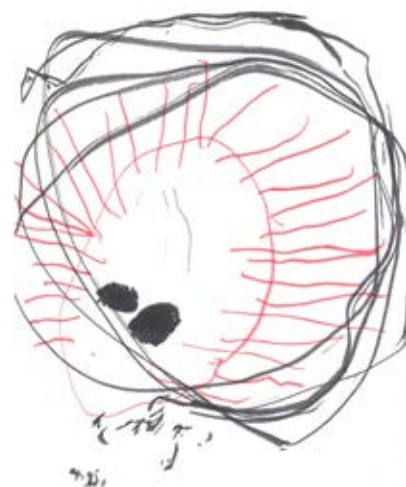
SOFIA N. 4 (NO DIRECTIONS)







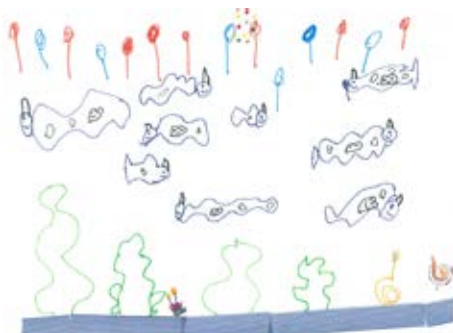
SOFIA S. 3,5 (NO DIRECTIONS)







## SOPHIE 5 (NO DIRECTIONS)









## SOPHIE 5 (WITH TASK)





## MASHA 4,5 (WITH TASK)



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## LIA 10 (WITH TASK)

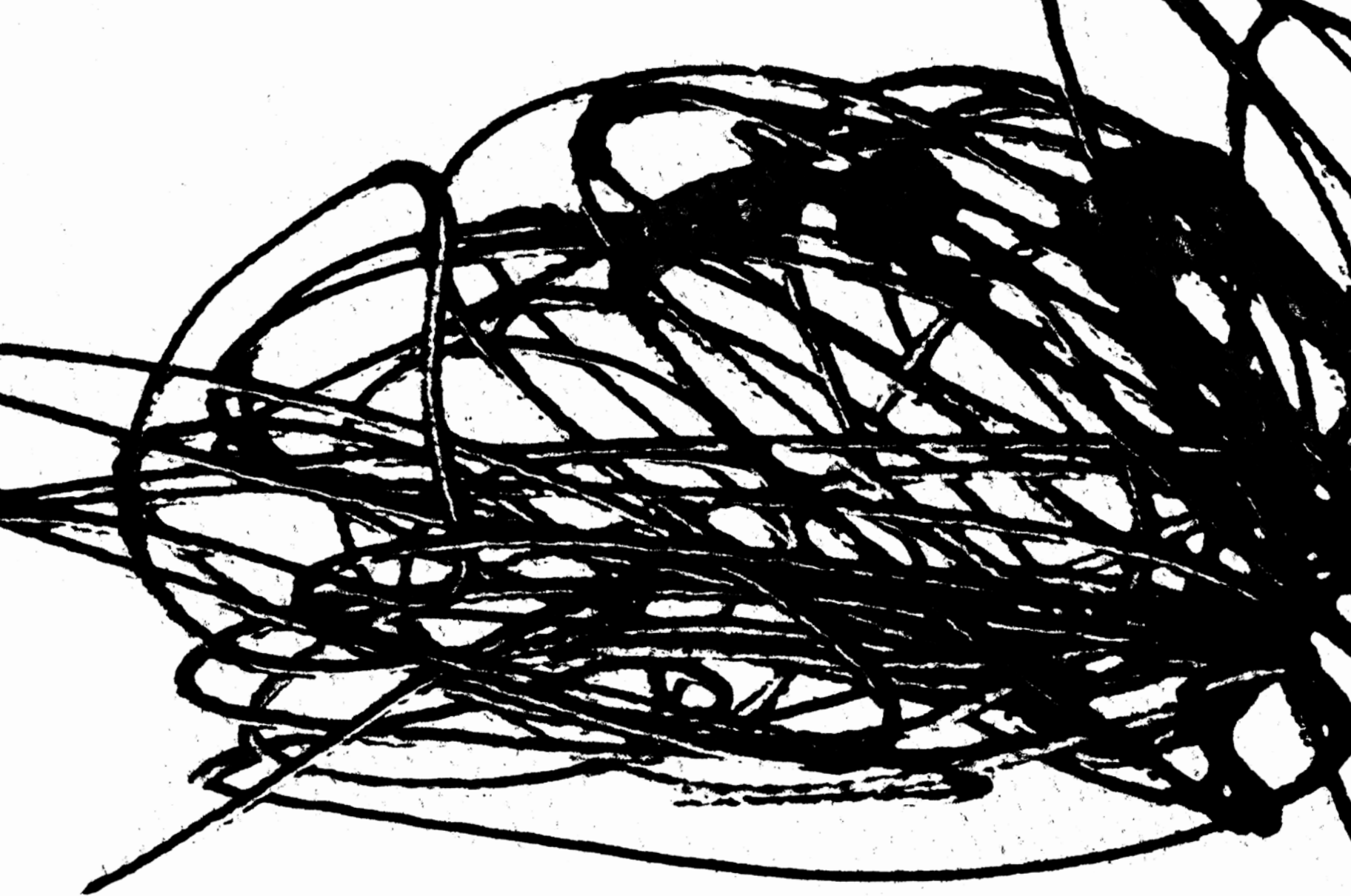


91

## LIZA 4 (WITH TASK)







## CHAPTER 2

# DESIGNER

*“There is nothing made by human beings that does not involve a design decision somewhere.”*

Bill Moggridge (IDEO co-founder in Kelleys, 2013: 245).

During the design and production phase, the participants technically are not involved, even though they are present as the idea in the designer's head. In other words, when I as a designer am making print patterns or cut patterns, as well as making many other design and production decisions, I do it for and with the user in mind. Further, my work as a designer and producer will be presented with step-by-step description and visual documentation of the design and production process, including basic collection development, the style of the collection, silhouettes, visual concepts, along with research on cutting and printing techniques and justification of choices I make for production phase.

But first, similar to the User chapter, the roles and responsibilities of designer in Ready-to-paint business model will be discussed.

# **1 DESIGNER'S ROLES + RESPONSIBILITIES**

First of all, it is important to consider that during the thesis project, one person—the author of the thesis—incorporated all roles that are essential to execution of this project, such as apparel designer, pattern cut maker, textile designer, sewer, in addition to being an entrepreneur, planning and launching this new venture.

Originally, the job of the designer as we know it today “was created to meet the needs of industrialisation”; but we should understand that today our needs have changed (Corin, 2013: 88), as well as problems and objectives. Contemporary designers are expected to visualize a future (Sherin, 2014: 20). Consequently, good designers in today’s realm are focused not only on producing creative and quality products or systems, but in addition to that, producing socially and environmentally sensitive work. Nowadays, a designer should understand that “decisions made during the design stage influence profoundly how a product will be made, what resources and materials will be used, and how the product will be acquired, used and discarded—the entire supply chain is affected by designer’s decisions. Therefore, the design phase provides designers with a greater opportunity to embed the principles of sustainability into a product or a service, and thus reduce negative environmental and social impact.” (Kozlowski, 2013: 137.) All in all, a contemporary designer unquestionably is an “influencer and shaper of our material world” (Fletcher & Grose, 2012: 155), “decisions made at the design stage determine more than 70 percent of the product development” (Waage in Kozlowski, 2013: 137), and furthermore influence the product lifecycle, along with the final stage-end of lifecycle; as well, these decisions have impact on the

life of product users, on our environment, not to mention the business that produces that product. This is a lot on the plate of one profession and with this comes a great responsibility.

During my work, I determined three kinds of responsibility that I think are essential to the design practice, and this thesis design phase in particular. Those are Creativity; Professionalism; Respect. Further, I talk about each separately, even though they are interrelated in daily design practice and have no order as to which comes first and which is least important. A good designer, in my opinion, includes it all equally.

## **1.1 PROFESSIONALISM**

At base of every profession, is to be good at what you are doing, learn the theory and practice the skills. Similarly, in order to be a good designer at basic level you need to be professional. During this thesis design stage, garments needed to be designed, fit, cut and afterwards, sewn. Every item needed to meet the aesthetics of the collection, to be contemporary, fashionable, well-fitted to each particular size, proportioned and designed so that it can be cut zero waste. In order to meet these requirements and do a good design job, the designer needs to be professional and know his profession, tools and techniques. Moreover, “waste is a design flaw” (Krebs in Berman, 2013: 129) and what has been designed and sent to production is often irreversible: “If the fashion industry is to adopt the highest and most effective level of waste management, then waste must be eliminated at the design stage. This implies that the designer must understand the processes involved in the construction of the garments that they are designing.” (Risänen, 2013: 19).

Next, designing print patterns require some professional understanding and skill as well. An experienced designer is able to envision which of the many children’s artworks can become a professional and interesting pattern. Then, his or her skills are needed to convert the sketch artwork of the child into a professional seamless pattern, in the process choosing the right program, tools and technique to use in order to achieve desirable result. Furthermore, professionalism is needed when the fitted apparels is made into a flat cut and this cut is digitalized and combined with a developed print pattern, color profiles should be chosen correctly and adjustments correctly made. Afterwards, this file will be printed by the digital printing company onto the fabric and there will be no way back. Therefore, when designing zero waste apparel, the designer should understand not only the design task, but be familiar with professional pattern cutting methods, as well as sewing.

I find that these professional responsibilities were very well visualized and described by Timo Rissanen in his Doctoral dissertation (2013: 82). Table 6 bases on Rissanen’s original table developed and presented by him as criteria for his fashion design practice that aimed to eliminate waste. The only criteria that is different for my practice: my developed garments are aimed mainly for mothers and daughters, but few garments were made for fathers, so the criteria instead of Russanen’s masculinity would be femininity and masculinity.

PRIMARY CRITERIA	APPEARANCE
	FIT
	COST
	FABRIC WASTE
	MANUFACTURABILITY
SECONDARY CRITERIA	FEMININITY OR MASCULINITY
	FASHIONABILITY
	SUSTAINABILITY
	FUTURE TRANSFORMABILITY
	PHYSICAL DURABILITY

**Table 6.** Based on Rissanen’s table “Responsibility of designer in developing zero waste fashion garments” (2013: 82), edited and redrawn by author of this thesis.



Besides these obligatory basics, there is another, higher level involved in being a professional designer. Designer is the one who needs to accept responsibility and ability to change things from the inside and, moreover, remember that

*“If a product doesn’t make the world a better place, it’s not worth existing. When we already have too much stuff—a new way to develop could also be to grow in quality instead of quantity.”*

(Corin, 2013: 88.)

The professional designer is thinking not only about the product itself, its execution and final look, but also about the future of the product; in other words, he/she is designing the entire garment’s lifecycle, including use and disposal.

Sandy Black (in Niinimäki, 2013: 17) suggests the following guidelines for a sustainable fashion designer:

- ✓• reuse waste materials
  - recycle
  - upcycle
  - repair and remodel garments
- ✓• recreate (e.g. existing design concepts)
- ✓• reduce (use of resources and creation of waste)
- ✓• use ecological materials
- ✓• use mono materials
- ✓• use new technologies
- ✓• create longer lasting products
- ✓• design multifunctional clothes
- ✓• design for delight

On the other hand, we have to understand that contemporary choices of materials or production can be limited, therefore the designed and produced product might be far from ideal (Niinimäki, 2013: 54). Similarly, in my work, I had high ideals and initial design ideas, but the final choices were made based on the available options. A professional attitude means knowing your options and choosing from the available ones that suit your purpose best.

## 1.2 CREATIVITY

In the thesis design and production phase, technically, the creative part starts with development of the collection of garments and then print pattern development. The designer is the one responsible for choosing a child’s artwork from submitted ones and envisioning the good-looking fashionable, interesting pattern that will suit the user and be liked by those associated with that user. This is one of the essentials of the designer’s job. Another basic part is to design a creative, aesthetically good-looking collection that will be suited to be printed with different kinds of print patterns. I do see the responsibility of a designer to meet the aesthetic look of the outcome and for me this does fall under the category of creativity. Although practically-grounded solutions bring tangible benefit, “aesthetic must be taken into account in order to create clothing that people want to wear. The aesthetic dimension is also fundamental for people forming attachments to clothing, valuing and taking care of it, thus lengthening its lifespan, cultivating longevity, and promoting the ideals of sustainability. It is important that both issues, the practical methods and aesthetics, are addressed together to meet sustainability goals in fashion.” (Aakko, 2013: 42.) And the designer is responsible to meet them both equally.

The challenge is that contemporary world is certainly doesn't experience lack of choices of clothes, even aesthetic looking and creative ones. In this thesis project, in addition to aesthetics, a personal story is added through co-created print patterns that have a potential to improve longevity, but only if, aesthetically and professionally, the designed and produced clothes are executed successfully. Although "the aesthetic quality of an object, clothing in this case, cannot be measured and judged in an objective way" (Aakko, 2013: 42), the most important judgement would be the user's opinion on the clothing's aesthetic qualities.

In the end, this approach of slowing consumption can ensure a higher level of sustainability of one's designer practice.

### **1.3 RESPECT**

The third factor I noticed in my practice that it is important for the designer to have respect. Not only one kind of respect, but respect on different levels and in different directions. The first time, I faced the question of ethics in design phase of this thesis is after the artworks was chosen and print pattern development was started. Such questions as how much am I allowed to change, what can be deleted, can the color be adjusted or changed completely, were raised in my practical work as a designer and co-creator of a pattern, where the initial sketch for further development is not mine but child's. Through my research and the interview process, I faced the pre-judgment of teachers and parents, that a child's artwork should stay untouchable, but this was before they understood the purposes and design processes of this particular practice. In fact, Anna Kegeles, my interviewee art teacher, during her first interview emphasizes that "it is totally unacceptable to make adjustments to the kids' artwork. The scale might be changed or a pattern made from a piece of drawing, but to add a new detail or even a line, no. She suggested such design process, she called

"meccano—the designer creates different elements that mom and a child combine to make a final product. The child can make decisions about the factors that he is interested in, for example, color. Mother chooses the rest." (Interview, 13 December 2014) Nevertheless, after I elaborated that in the co-creation process with the purpose to design wearable and desirable clothes, the designer's role is more significant than just meccano, and perhaps the child's artwork should be seen as an adult artwork and treated with the same respect as it would be for two adult artists or designers working together. During the second interview after Anna saw the results of the design and production work, she was asked similar set of questions about the role of the designer. First: "If we are talking about co-creation that aims to make any physical product, where do you think the border line for editing and changes in children artwork is?" Her reply was:

"It seems to me that it is primarily a question of agreements and pre-determination of the boundaries, that means the consistency of expectations. It could be very different situations: from an untouched child's drawing, placed in some other context, to the use of the same drawing as a material to create your own product. The project objectives and goals of the artist can determine this line. What is important to me is no matter where the line is everything should be done with honesty towards the child and the consumer. It is important to me to understand the roles clearly and knows exactly that it is actually a child art if it's called so and if not it also should be labeled clearly."

The second question was: "How do you think a child's role in artistic collaboration with an adult should be assigned?"

She replied: "Like in every collaboration, agreements can be made on different levels of parity. Cooperation is possible in a 50/50 ratio, as well as any other possible arrangements. I do not think

there is one correct way. But all the right ones are done with a respect to the role of the child and his creativity.” (Interview, 27 October 2016)

While I was not agree with the judgement that children’s work is untouchable, I do share the views that were expressed during our second interview. More on the practical side and decisions that have been made during the design work will be shown further, in a separate subchapter on the Print Development method.

Additionally, mothers from the research group were asked what kind of changes or corrections in children artworks they consider ethical for designer to make. The received answers were similar in its trust in designer’s ability to decide: “it’s the designer’s decision” said Albina Klimenko (Interview, 27 December 2016); Elisa Mirliton wrote that she agrees “on anything, if the drawing is still recognizable and the result is good looking” (Interview, 5 January 2017); Iuliia Nikitina specified that color correction sharpness, turning shapes are ethical manipulations (Interview, 11 January 2017).; Katya Stavitskaya wrote that any decisions are allowed unless the main motif of the drawing stays untouched (Interview, 12 January 2017).

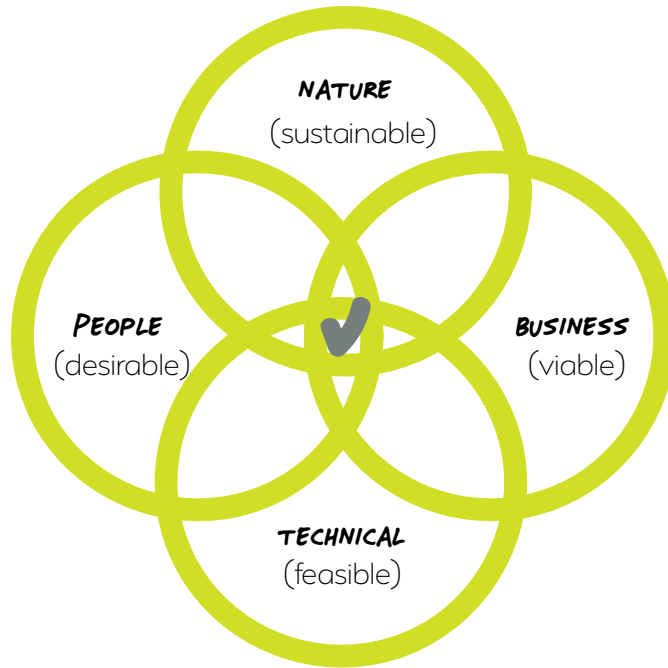
On the whole, during my design experience, I formulated a method for myself that includes three things to respect: User; Nature; Business. Later on I realize that there is a fourth one: Purpose. Through my research process for this thesis, I educated myself on the topic of the triple bottom line and find the similarities between my intuitive conclusions and existing theories.

“The triple bottom line” concept (first introduced by J.Elkington in 1994) suggests that the corporate profit, people (how responsible is the company on the social level) and the planet (environmental responsibility of the company) are the three Ps to measure the performance of the company (The Economist, 2009).

Recently, the fourth bottom line has been discussed; therefore the concept of quadruple bottom line was introduced. The fourth bottom line is called purpose:

“Acting responsibly is not about strengthening our reason. It’s about deepening our concern for the welfare of others and ourselves. The quadruple bottom line brings our attention to purpose and its importance in the workplace and our lives. And it demonstrates the power we have for positive transformation in the process of becoming purpose-driven people... In general, three ways that a business or design practice can generate purpose are identified. First is creating purpose for customers, users, second is creating purpose for your employees, or yourself, and last - building purpose through your supply chain. Real change must begin from inside the organization.”(Zahringer, 2014.)

In addition to the triple bottom line concept, the Kelleys, on the other hand, in their book, *Creative Confidence*, suggest that every innovation program is based in three balanced factors: people (desirable), technical (feasible), and business (viable) (2013: 19) I agree and suggest a fourth: nature (sustainable). (See Figure 2 with suggested changes). They point out that: “a new technology—if—it truly works—can be extremely valuable, and can provide the basis for successful new company or a new line in business” (Kelleys, 2013:19) In this thesis work, digital printing technology is one of the relatively new technologies that this project is based on and will be discussed in following subchapter. More possibilities of involving new technologies will be discussed in last chapter.



**Fig. 2.** Based on Kelleys' figure "Finding the sweet spot of feasibility, viability, and desirability" (2013: 19), edited and redrawn by author of this thesis. The Nature aspect is added to the original figure.

Indeed, the concept of triple and quadruple bottom line (people, planet, profit, plus purpose) as well as Kelleys' three factors of innovative programme are very similar to my intuitive design guidelines, but put in different words, such as: respect towards the user, nature, business, and similarly, purpose. As this is the personal work, I'll continue using these words to explore the subjects under discussion.

### **- RESPECT OF THE USER**

At a basic design level, respect of the user, in this practice, would mean respecting the original artwork of a child, consider the emotional attachment and story behind the drawing. The original artwork should clearly be identified in the final pattern, but designed creatively and fashionably. One of the designer's responsibilities would be then to understand the trends or styles of a particular time; moreover, to feel what stands behind the child's drawings that was submitted for the pattern, and create an outcome that will be valued and fits with the initial beliefs, or is a surprise in a positive manner. Similarly, the collection of the outfits should be designed with respect to the end-user, which means it should fit and be proportionally balanced; the quality of the fabric, printing and sewing should meet or exceed the expectations of the end user, and as well be done with greater respect to the end-user. The designer should empathize with the end user and learn from observing him/her. In general, the human factor is largely about learning and understanding human needs, getting at people's motivations and core beliefs. (Kelleys, 2013.)

On a greater level, taking into consideration the humanity well-being in every level of one individual or communities and societies is also responsibility of a contemporary design practice, and is called social sustainability (Niinimäki, 2013: 17). Berman emphasizes that "contemporary designers create so much of the world we live in, the things we consume, and the expectations we seek to fulfill. Designers are the ones who shape what we see, what we use, and what we waste. Designers have enormous power to influence how we engage with our world, and how we envision our future. Nowadays, it is said that the future of our world is now our common design project." (Berman, 2013: 1.)



The challenge of engaging user to different stages of production process to co-create meaning and do so with respect to the user party (Kozłowski, 2013: 137) was met in the current design work, hence it added responsibilities to the designer's role.

### **– RESPECT FOR NATURE**

Second factor, I do consider important for this thesis work is respect to nature or the Planet as it is named in the triple bottom line concept. The suggested business model of this thesis project aims to be considered sustainable design practice as well as eco-design and design for the environment practice, that basically takes into consideration our environment, and especially, life cycle thinking, the ethical and social dimensions of the product, the production phase as well as the use phase and end-of-life phase (Niinimäki, 2013: 17).

In general, it can be said that in every stage of decision-making the respect for nature should be on stake. Niinimäki emphasizes following stages, during which the environmental impact can be decreased:

- fibre production, finishing, dyeing, and printing
- global logistics during manufacturing and sales
- the use and maintenance of the product
- disposal of the product

(Niinimäki, 2013: 13)

She also draws attention to The European Commission's principles of environmental design, that were previously mentioned in the Introduction of this thesis:

- to use low-impact materials whenever it is possible
- choose resource efficiency
- prefer high quality and durability

- design for reuse, recycle and renew

(SEC 2009: 21 in Niinimäki, 2013: 17.)

Accordingly, the Ready-to-paint project production process was focused on digital printing technology rather than on conventional roll or screen printing. The advantages of digital vs conventional will be discussed in following subchapter on Printing method. The fabric was sourced from the company located on the same continent, and it was printed, cut and sewn, in the same city area. Local manufacturing process do save natural resources significantly, in addition to low use of water in digital printing technology. The choice of materials and sewing techniques was guided by the goal to achieve high quality and physical durability for the end product. For easier maintenance of the clothes, care labels are printed in the inner side of the garment; moreover, fabric that is easy to maintain was chosen for the garments. Furthermore, care label instructions indicate a colder temperature that is lower than usual washing temperature—for saving energy in household cleaning practices, but also to preserve the color of the fabric better.

Although all respondents-users of the garments reported that they will save the garments even after they outgrow it or stop wearing it for any reason, because of the emotional attachment they have with it– these garments can be recycled easily due to the use of mono-material and the absence of buttons, zippers, and such. Moreover, the garments designed in such a way, that they can be multi-purposed and be passed on to younger siblings (children's clothes) and from mother to daughter (adult clothes).

In brief, when choosing from available options for design and manufacturing, the designer of this project was choosing options that have more respect for nature and the planet, along with the

user and business. By doing so, the goal of building a sustainable production chain was met at a currently available level, and a vision for further improvement was built.

### **- RESPECT TO BUSINESS**

Business factors, or an element of economic viability, is not only one of key elements to successful innovation, it is also a factor that helps a sustainable business model to sustain in the business world. Because, whatever the innovation or business is suggesting, “it needs to be produced and distributed in an economically viable way. It needs to fit into a business model that will allow the enterprise to strive.” (Kelleys, 2013:20) Simply saying, if your idea is great for user and good for nature, but can’t make any profit to support the business and its employees, it is unlikely to sustain for a longer period of time, moreover it is not a socially responsible venture if it doesn’t provide its employees with monetary satisfaction. Therefore, the respect to business goal should be embedded in designer’s daily practice and decision making. Additionally, it can also mean that designers should think through their design decisions and evaluate prospects in regards to profit for the company. Likewise, the business will benefit from designer’s environmental and social responsible decisions in the long run.

“Recently the approach of extended producer responsibility (EPR) has gained a lot of attention and discussion in the EU...In EPR the goal is that already in the design phase producers think about and plan how they can reduce environmental impact of the product after use.” (Niinimäki, 2013: 25.) Therefore, it is again the responsibility of the designer to think through these steps and prepare solutions with respect to business that will need to deal with them later on.

Accordingly, designers should understand that they actually have far more power than they realize:

“Their creativity fuels the most efficient (and most destructive) tools of deception in human history. The largest threat to humanity’s future just may be the consumption of more than necessary. The same design that fuels mass overconsumption also holds a power to repair the world. Designers can be a model for other professionals for identifying one’s sphere of influence, and then embrace the responsibility that accompanies that power to help repair the world. So designers shouldn’t just do good design, they must to do good.” (Berman, 2013: 2.)

Niinimäki emphasizes that “companies and the world need strong and brave designers who questions today’s practices and examine how to do things differently. Moreover, these change-makers can demand sustainable change from their suppliers, subcontractors, or manufacturers, and through this pressure create change in the fashion industry.” (Niinimäki, 2013: 54)

In my own experience through this project, I faced the challenges of production limitations, but also the great respect I got from the companies as a result of my will to act and produce responsibly. As well, I was positively surprised by their willingness to suggest different options and propose more sustainable solutions that helped meet my expectations as a designer.

## **1.4 OTHERS**

Similar to the responsibilities of the designer I discussed previously, Fletcher and Grose identify several roles of the designer in contemporary practice, they advocate that designers who are experts in creating and producing things can find new ways of operating—as communicators, educators, facilitators, activists and entrepreneurs (2012: 156).

In the Ready-to-paint project I see myself as communicator-educator through several streams. The first is clothing labels, where all the significant parties of the production and supply chain are mentioned, such as artist, print pattern designer, cut pattern designer, sewer, printing facility, fabric source. In addition, there is information about the fabric composition and amount of waste left from the production. Through these labels printed on the inside part of the clothes, I communicate and educate the user about the efforts that are involved in the production of each fashion item; about the people that are involved in the production; and about the fact that often there is waste left from the production but not in the case of Ready-to-paint clothes. Furthermore, the story of the business and design model is communicated transparently through social media streams, with the same goals of education and communicating the story of the project and the values that this project stands for.

According to Fletcher and Grose (2012), the designer, facilitator and activist, make an informed choice to make a difference in existing fashion system, improve it along with products, production processes and business practices (167).

While working independently on the Ready-to-paint project, the developed solutions can be implemented for bigger corporations and make the positive change on the higher level. The third main designer role Fletcher and Grose emphasize, is the entrepreneur. This role lies mostly in changing certain ways of thinking and acting:

“Systematic innovation around sustainability begins with a change of thought patterns and behaviors, which leads to the building the structures and practices defining and describing economic activities by ecological limits” (2016:170).

In conclusion, developing best practice can mean that designers and companies choose the best available environmental, social and business solutions, although the options are limited for everyone in different levels, there are still choices available to be closer to the ideal goal of sustainable, ethical, environmentally friendly production models. Furthermore, it is important for companies and designers as well to articulate their values and actions to their customers .(Niinimäki, 2013: 45-46.) It can be argued strongly that sustaining our environment, so that future generations can meet their needs, is the largest challenge in the task of designing a better civilization. Up to this point, responsible designers were more focused on how the end products can affect global sustainability. However, the design process has as much impact as the products itself. Particularly in a creative industry, the process influences what gets produced, because how designers’ work affects the creative process. Moreover, a designers’ creativity makes them innovators in the eyes of the clients, users, companies: designers are opinion leaders when it comes to process. (Berman, 2013: 129.)

*“Design creates culture. Culture shapes values. Values determine the future. Design is therefore responsible for the world our children will live in”*

(Peters in Berman, 2013: 146)

## **2 DESIGNER DECISIONS**

The following subchapter of the Designer’s story will be focused on practical design and production decisions that were made during the applied research process of this thesis work. When options for ecological production are limited, Niinimäki suggests to practice “realistic thinking” and do what you possibly can (Niinimäki, 2013: 45). The process of choosing the best suitable design and

production solutions that are environmentally and social responsible is presented in each subchapter separately, even though the judgement on this is subjective and some may disagree.

First, the inspiration and the process of collection development will be discussed; then, cutting pattern method covering zero waste goals; thirdly, printing methods and available printing companies will be compared through testing. After the printing company was chosen, the options of available textiles were assessed and decisions were made. Further, the white collection of basic styles was developed, based on the previous choices. Simultaneously, artworks for further pattern development were selected, and the print development process was started where different methods were also used. Lastly, the design and philosophy of the labels will be discussed. The final results of the presented processes will be shown in the next chapter Together.

## **2.1 COLLECTION STYLE**

The need for conducting visual theme research, as I was taught during my fashion studies in both Universities, has weakened after practicing draping methods and a zero waste fashion design approach (see next subchapter Pattern Cutting method). Therefore, the moodboard I made for myself at the beginning was more about feelings that I aim to communicate through the clothes I was developing in this project, rather than references to exact details, construction or colors (the first moodboard presented in following pages). Due to the co-creation approach, I couldn't envision what kind of final products will be created, as many factors were dependent on original artworks submitted by children's parents.

The basic styles appearance was mostly resolved through sketching, toiling and pattern cutting. The important criteria for the collection style was visual durability (the criteria introduced by

Rissanen, 2013: 84); therefore, I chose to reference the timeless apparel style of childhood memories and combine folk cuts with a contemporary touch. I decided not to copy exactly the children's cut for adult cuts, but made changes according to the age and size, while keeping the chosen style in mind.

In zero waste design, pattern cutting is an active stage of designing (Rissanen, 2013), and this was difficult to overstep at first, because the conventional approach would be: sketch and design collection on paper first and then develop pattern cuts from those sketches. This wouldn't work for the zero waste production (More on this topic in the following subchapter). Therefore, the developed sketches were for reference only and final styles were developed by interlocked processes of pattern cut development, print pattern development and designing the collection.

The style was very much dependent on the fabric choice, which was directed by limited available options. Based on the fabric, created styles are for the summer season, rather than all seasons.

Overall, I aspired to make zero waste basic white styles that will provoke the feeling of an innocent childhood, freedom, endless summer fields that are joyful and ready for play, and that are comfortable for everyday use, but make its owner feel beautiful and free to move and enjoy the life. The outcome is presented in the next chapter Together.



# MOODBOARD

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## 2.2 PATTERN CUTTING METHOD

The Ready-to-paint project aims to find sustainable solutions in every stage of its execution, and pattern cut development is a significant part of it. It is reported that fabric wastage during traditional pattern making and cutting processes varies from 10 to 20 percent (Rissanen, 2013: 4). 15 percent of 400 billion square meters (the estimated amount of fabric produced globally in the apparel industry in 2015) equals 60 billion square meters of fabric waste, that is either recycled or ends up in a landfill (Rissanen & Mcquillan, 2016: 10). In traditional design practice, garments are not initially designed to eliminate waste in the cutting stage (Rissanen, 2013: 4-5). The Ready-to-paint approach differs and suggests thinking through the final cut during the sketching and design stage. As a result, zero waste garments and objects are created. It may seem unrelated to the subject of co-creating with little artists, at first, but I aim to develop as sustainable product as possible, in order to communicate social and ecological values to the consumers—parents and little artists—through the clothes they wear.

### **ZERO WASTE**

Zero waste practitioner, researcher and designer, Timo Rissanen, identifies zero waste fashion design as: “design activity that results in zero waste garments or that wastes no fabric” during its manufacture. The method of construction is suggested to be the same to Cut & Sew; technically, the pattern pieces are interlink on a length of fabric; as a result no waste is created during cutting out the pattern pieces (Rissanen, 2013: 35.) This is one of the suggested methods in this thesis as well, even as others are accepted, with the one condition that no textile waste is created during the manufacturing process.

*“A broader and more holistic definition of zero waste fashion design would include delay of garment disposal as a design criterion”*

(Rissanen, 2013: 14).

Consequently, the suggested Ready-to-paint practice is a zero waste fashion design model and this subchapter is going to address several methods it uses to eliminate textile waste.

Rissanen in his doctoral thesis draws attention that main obstacle to zero waste fashion design is “the separation of roles of fashion design and pattern cutting and, therefore, the separation of fashion design from the making of garments” (2013: 23). In Ready-to-paint working model the fashion designer knows pattern cutting, therefore, the design and cutting processes are interlocked and pattern cutting is situated within the practice of fashion design.

My main design method for white models/basic styles, that was used during design stage, was chosen intuitively and based on years of practice; however, I find it is precisely described by Rissanen (2013: 40):

Sketch – Draping – Pattern-Toile – (design alteration) – Pattern alteration – sample garment.

In this project, the pattern cutter and designer is actually one person with the skills of both; therefore, the process of sketching and draping is influenced by pattern cutting planning naturally, with the end goal to make a zero waste prototype. In order to make the garment zero waste, “fabric width must be a design criterion from the outset because it defines one of the spatial dimensions from which the garment is cut” (Rissanen, 2013: 60). Two methods of pattern cutting were used: square-cut and tailored.

“Square-cut refers to garments that are cut from primarily rectangular or triangular pattern shapes; straight pattern piece edges dominate. Tailored refers to patterns that make use of curved pattern edges” (Rissanen, 2013: 61). The square-cut method prevails in chosen prototypes. I suggest that is because of the initial referencing to folk costumes and traditional children’s dresses. However, for one style of adult dress and one style of child dress, the tailored method was chosen, in order to create variety and more up-to-date style. (Figures 4-21 present sketches and pattern cut schemes of zero waste garments, Figures 16-19 features two tailored zero waste garments on pages 121-135).

It is important to remember, that significant criteria in designing without fabric waste are still its appearance and fit, final cost should be considered as well; and it is a challenge for zero waste designer to balance these criteria together with concern about fabric wastage (Rissanen: 2013: 79).

For this reason, I decided not to experiment with such traditional garments as men’s underwear, and used the traditional tailored pattern cut for those garments. In this case, a double-sided toy created from the child drawing was printed on the same piece of fabric with underwear pattern cut. After the cutting, all the white leftovers were shredded and used for filling of the toy, what made the final garment zero waste one. (See image 108).

Marker, “the cutting plan of a garment containing all the pieces required to make a garment” (Rissanen, 2013; 79), was created digitally for each basic style. I used Adobe Illustrator to create digital version of the pattern cut and the marker. Afterwards, each marker was filled with co-created print pattern accordingly, the labels, technical and personal information was added to each marker individually. Those designed markers were printed directly onto the fabric with digital printing technology (that will be dis-



**i108.** Men’s underwear, toy and left-over textile waste, that becomes a filling for the toy.

cussed in the next subchapter). The printed fabric was then ready to cut and sew. I observed the same tendency as Rissanen did in his practice, that one movement of cutting is creating two pattern cut pieces simultaneously, which makes pattern cutting faster. In fact, the shared cut line is not only faster for cutting but also less expensive, due to the fact of saving time and fabric (Rissanen, 2013: 81).

The length of the marker is how much fabric is needed to be used, usually called the yield. (Rissanen, 2013; 79). In my practice, I limited myself for maximum of 150cm yield for adult models, and 100cm yield for child models. As a result, the marker length for the adult dresses and skirts varies from 100 to 150cm, and the marker for children tops, skirts and dresses is 50-100cm. The yield of men’s underwear plus toys was 50 cm, and the yield for adult and child scarf and care bag was 100cm. Fabric width varies in three types of fabric.

The pattern cut was designed in order to place the open edges, such as the top line of the garments and bottom line of the garment, towards the beginning and end of the marker, thus towards the beginning and end of the digital print. This was done due to the fact that, during digital printing, the printing machine (or operator) can leave unprinted extra fabric and only then proceed to the printing of the sample, the same can happen after the printing of the sample is done. Therefore, if the garment cut is placed accordingly, the extra fabric can be used for hem allowance. (Schemes of marker for discussed garments are presented in Figures 4-23 further).

Besides, during first tests it turned out that digital printer can not print an engineered pattern cut on the fabric selvages. In practice, this meant that the file for final marker should be designed two to four cm narrower than the width of fabric, and those extra centimeters on selvages will be left unprinted. This waste problem was addressed with different methods. In some cases, the extra was left for seam allowance; in some cases, it was used to strengthen the seams, or stabilize seams internally; and in other cases, it was used to make the strings, straps and belts. To do so the pattern cut needed to be designed accordingly. This is mainly how the goal of eliminating of pre-consumer waste was achieved in this project.

Furthermore, I can envision a waste concern regarding flaws in the printed fabric. If there are flaws, or mistakes, imprints in the yield of the engineered printed pattern cut, then the whole pattern cut should be reprinted. With traditional manual pattern cutting method, the seconds (flaws, imprints on the fabric) can be left out by moving pattern details slightly; however, it is impossible when the cut is digitally-printed on fabric together with print pattern. Nevertheless, this challenge and excess of printed fabric can be addressed by using these defected printed yields for stuffing the co-created toys. But this is not a single solution of this challenge.

In fact, the flows happened with two engineered printed designs. Once, the color flaw happened on the pocket pattern cut piece. The printing studio suggested to reprint the whole yield of the fabric. I, instead, decided to continue to the cut & sew stage. This flaw is positioned in an inner side, on the pocket detail, and is unseen (See image 109). I do think that this kind of flaws shouldn't have an effect on the use of the printed fabric, and there is no need to waste the whole yield of fabric if the flaw happens in inner cut pieces. The second time, the printing machine mistakenly printed the stripe of a design twice. But the print pattern had stripes in its design. Again, the company suggested to reprint the whole yield, and again, I considered that this kind of flaw should not lead to the wasting of fabric. This flaw became a part of the final look. This experience has led to the conclusion that a print pattern should be designed keeping in mind different kinds of flaws that could happen in production. And the mistakenly-printed fabric should be recycled into the filling of the mentioned toys only in case where it cannot be used for the final garment using design thinking.

As a general rule, as mentioned previously fabric waste can be divided into two categories pre-consumer and post-consumer (Risänen, 2013 3-6). In Ready-to-paint project I define three levels of pre-consumer waste eliminating approach, which are:

- Zero waste pattern cut, that is already discussed
- toys filled with waste. Wherever the zero waste pattern cut is not an option (such as men's underwear or other possible tailored garments), the child's drawing of a future toy is printed together with tailored pattern cut. All the textile waste left from this yield will go inside the toy. The user is getting the garment co-created with his/her child's drawing and the child gets the toy of his/her drawing. It can be called recycling in the production level, but I prefer to see it as upcycling, because it "aims to keep the product's quality high and it even increases the value





i109. Digital printing flaw. Dress pocket detail.

of the material" (Niinimäki, 2013: 18) Instead of being thrown away, this material is used for making the toy that will possibly be loved by its author, in addition to the ordered garment.

- mass-customization and made-to-order approach. During such an approach, only the exact needed amount of fabric is printed and nothing is produced prior to the order; therefore, there is no excess of fabric created and what gets printed will be further cut and sewn into already ordered garment.

Post-consumer waste challenge is met in two levels during this project:

- First is its ability to be recycled through the use of mono materials. According to Niinimäki, "the recycling approach needs mono materials, which means that the whole garment is made from one material only (including threads, buttons, zipper etc.) This makes it easy to recycle as one piece and one material" (2013: 18). Ready-to-paint pieces are made from one material only, there are no zippers or buttons used in a garments' production, therefore those garments are easier to recycle, if needed.
- The second approach of eliminating post-consumer waste is through creating emotional attachment towards the garment. It is created by bringing memories and meaning into the apparel

through the co-creation practice; consequently, if the garment is loved, it will lead to longer use of the garment. If the user intends to save the garment for the next generation, we eliminated it from becoming waste during this user's lifetime and potentially even longer.

In short, even little improvements in production towards eliminating textile waste can be considerable when scaled to big runs of manufacturing, but a goal of zero waste fashion design should be a holistic approach, in which the textile waste challenge is met on multiple levels of pre-consumer waste and post-consumer waste. And this challenge should be met on the design level and taken into consideration at every step of designing the garment itself and its lifecycle. Even though, design and production processes in fashion industry haven't change much since industrial revolution (Rissanen, 2013), nowadays change makers are slowly developing new methods of dealing with waste in the fashion industry. Especially, new opportunities arise with rapid development of digital technologies. This thesis' design and production process has researched the possibilities of eliminating textile waste on different levels, pre-consumer and post-consumer, with the use of digital printing technology.

## 2.3 PRINTING METHOD

Even though the choice between traditional or rotary printing method and digital printing technology seems to be obvious for the needs of the Ready-to-paint production, this is especially true for those who are familiar with both methods. Therefore, I'll introduce the main objectives of both methods, and the ones that are similar, to justify my choice of using digital printing technology. See [table 7](#) in the next pages.

Traditional: Rotary and screen printing	Digital printing
<p>Rotary and screen printing processes require color separation of every design, that follows by production of a roll or a screen for every separated color; then, every colour/ink is applied through the roll or a screen separately building up the final image.</p> <p>The number of screens/ rolls is equal to the amount of colors used in one design. Every additional color adds to the time and cost of the production significantly and it has limitations, usually it is eight colors, but can be up to 20.</p> <p>Designer should separate colors in the repeated pattern prior to the printing process. The repeat of the printing pattern depends on the size of the screen or the roll, usually it is standard of 64cm, but different manufactures can have different standards. Making repeated patterns for rotary or screen printing is a professional skill and the design stage of one pattern is usually longer than for preparing design for digital printing (observation from personal experience).</p> <p>The production advantage of the traditional printing is its speed: 45-100 m/m (depends on design and fabric (Kiron, 2012), but this advantage really makes a difference for high volume production of one design at a time.</p> <p>These analogue processes has high minimum printing requirements and time-consuming production. The order must be placed minimum eight weeks ahead for the minimum of 100-500 thousands metres of the same design. (Gaitskell, 2016.)</p>	<p>There is no need in color separation, limitation of colors used in the design and, most importantly, screen or rolls production.</p> <p>“Digital textile printing is done with inkjet technology, which sprays droplets of ink on the media’s surface, either fabric or transfer paper. It can print directly onto the surface of a finished garment, like t-shirts, or directly to rolls of fabric. With the direct to roll method, there are five main ways of printing fabric with various ink methods: dye-sublimation, disperse, pigment, reactive and acid.” (Clotho.co.) In this work when talking about digital printing mainly reactive and acid printing technology is mentioned.</p> <p>The inks are directly applied to the fabric by digital textile printer, the fabric needs to be pretreated before it goes to the printer in order to be receptive to dye. The difference between reactive and acid lays in the fabric they are designated for: reactive inks – for cellulose fibres (cotton and linen), acid inks – for protein fibres (silks, wools, synthetic nylons). “These dyes can achieve brighter colours than pigments, and have a higher colourfastness and better resistance to fading. After printing, reactive and acid printed fabrics are heat steamed to set the ink, and washed to remove any excess dye. This process is more energy intensive then pigment printing, but very little dye ends up as wastewater, especially compared to traditional vat dyeing, rotary and screen printing.” (Clotho.co.)</p> <p>Basically, any image, such as an unedited photograph, can be directly printed onto the fabric. The design can be seamlessly repeated either printed continuously as a placement print.</p>

Second disadvantage is the high cost of equipment required for each design, as well as the cleaning time every time the design need to be changed and down time when these procedures are performed. Therefore it is usually not profitable for short runs of variety of patterns (Kiron, 2012). "Print seconds, or printed fabric with one or more defects, are very common to traditional textile printers. Industry wide, a textile printing plant will average have between 2 – 10 % seconds." (Tippett, 2001.)

Traditional printing consumes extensive volume of chemicals and water in its production therefore it is very polluting process. Given its large size, the problem is multiplied significantly. "Gaseous emissions have been identified as the second greatest pollution problem (after effluent quality) for the textile industry – and these are largely generated in printing... The waste ink and the solvent must be disposed of properly in order to minimize environmental impact.

Leftover print pastes cannot be allowed to enter the wastewater treatment system. It must be disposed of as a solid waste. Sites where sludge piles are used can have environmental problems with ground and groundwater contamination." (Anne, 2012)

Technically there is no minimum in digital printing production, companies usually suggest minimum one yard or metre available for order. This is done to justify the human resources expenses.

The cost of every metre does not depend on ordered yield and stays the same. The order is usually filled in from one to seven days. It is printing-on-demand process, therefore there is an opportunity to keep the production process with no excess of printed fabric and print only exact required yield. For these reasons, digital technology is best suited for producing very short runs down to one at economical cost.

For better printing quality designer should understand how digital technology works and do digital file adjustments accordingly, but generally the printing company does color adjustments on their own for better reproduction of colors from screen to the colours on fabric. For example, the common challenge of digital printing nowadays is colour reproduction, repetitions, misfires (spots with no color applied), and side-to-side and meter-to-meter shading of colour. Any image is printed by series of ink dots applied by printer to the fabric, the result can be perfect in color combination or an accidental mess, it usually depends on combination of the design software, printer quality, ink choice and the initial colors chosen by designer. These defects can be prevented by the proper choice of inks, printer, and design software, additionally designer can take into consideration those problematic zones and adapt this knowledge into design process. (Tippett, 2001.)

Digital printing technology applies color onto fabric slower than rotary or screen printing. The latest industrial printer that was designed for high-speed production prints approximately 1,000 sq m/hr., but comparing numbers to rotary printing it is 4-9 times slower (assuming that both fabrics in examples are 1.5m wide)(Fletcher, 2016)

Another key advantage of digital textile printing over rotary and screen printing is significant reduction in the environmental impact. It is possible to produce the same amount of textiles with considerable reductions in water consumption, up to 90 % when compared to rotary screen-printing. Moreover, less energy is consumed as well as the level of CO2 emissions is reduced in the processes of steaming, washing and drying. Additionally, dyes are water-based. (Gaitskell, 2016.)

**Table 7.** The differences in traditional and digital printing technologies.

In general, main advantages of the digital technology over traditional for the production of this thesis and future business model are its availability and low cost for short run production, existing solutions for mass-customization, and its eco-friendliness. Moreover, digital textile printing allows for the application of the garment pieces-pattern cut and textile print pattern onto the fabric surface simultaneously (Rissanen & McQuillan, 2016: 141) and this technique was used for the production of the final garments. Digital printing supports the textile system that produces and adds more materials into the world, but digital technology also has a potential to change the system at its core, printing only on demand and at the exact amount of metres that is needed. Mainly for these reasons digital printing was chosen as a printing method for the Ready-to-paint production.

When the decision on technology was made, the research of the available options for digital printing companies to collaborate with was the next step.

I decided to narrow down the location of possible digital printing place to work with to, either, one from Finland, or one from North America, preferably Canada. This is due to the fact, that this thesis is done for AALTO University located in Finland, and the fact of that my location during the production period was in Canada. In 2015, two Canadian companies had started their digital printing operations: ArtofWhere, in Montréal; and Clotho, in Vancouver. Spoonflower is one of the largest digital printing services for custom orders, located in USA. Samples from these companies was ordered in July 2015. In September 2015, during my visit to Helsinki, digital printing samples from the AALTO University tex-

tile studio were assessed. Furthermore, Printscorpio, a Finnish digital printing company was contacted too. Although the printing quality of the Finnish locations were exceptional and the choice of base fabrics is wide, prices were higher than North American; moreover, to print designs in Finland and then transport them to Canada was considered to be not an environmentally friendly solution. Therefore, the choice was between two Canadian companies and the US-based Spoonflower. First tests showed that four natural fibres available for printing at ArtofWhere (2015) were twill cotton, but these were a too heavy weight for the Ready-to-paint collection idea, and three kinds of silks, which were too light and transparent, in addition to being expensive, and overall not the best solution for everyday clothes. Moreover, printing test showed that color reproduction and dot sharpness are not satisfying for the latter.

Spoonflower's choice of natural fibre fabrics was wide and the service had well-established printing reputation. However, during first printing test it turned out that the company "can't print in increments other than by the yard" (email from 16 November 2015) so to get a print that is 110cm, for example, I'll have to order two full yards (that is 182cm), which would make it problematic to print zero waste designs that are not exactly one yard in yield. Furthermore, the company considers that: "it is best to not pretreat or preshrink the fabrics, or to try to adjust and scale other's designs based on shrinkage estimates. If you need a precise finished size, that would be the best way to account for fabric shrinkage in your design. The range of shrinkage varies in the posted range over all test cases. Sometimes it doesn't shrink at all, and other times it will be the highest percentage...This is why it can be problematic to print a design on fabric that needs scientifically precise measurement." (email from 19 January 2016)

However, in my first test, I didn't implement shrinkage adjustments, assuming that the technology is similar to the Canadian company Clotho, that does shrinkage calculations, adjusts the design, treats and preshrinks the fabric, so that the client gets the exact design he/she sent in the file. Therefore, I got the sample of four yards with three cuts of co-created men's underwear, together with toys drawn by the same authors, and the rest of fabric I used for label tests. After the cutting and sewing stage, I washed the garments and they shrank considerably. Moreover, the red color has faded. Fortunately, all underwear still fitted their users (the fathers of the little artists), and the user of the red underwear didn't report any dissatisfaction about the print quality. Therefore, the fit and print quality didn't affect the emotional attachment of the final outcome. Consequently, it was decided not to use Spoonflower company for further research on zero waste production of co-created garments, mainly because of the restrictions on yard increments.

The first test with the Canadian company, Clotho, was made in July 2015. Zero waste square cuts were tested on twill cotton. The test wasn't successful, due to the irregular displacement of the squares. But the company responded to the challenge with a greater resolve to test other fabrics and find solutions for better results. A meeting between the company executives and me took place at their printing house in Vancouver on October 20th, and this thesis sponsor proposal was discussed. The Clotho company agreed to sponsor the testing and sample printing for the applied research part of the project, in exchange for feedback and photo documentation of the process and outcome.

For the record: all samples printed with Clotho were printed on Mutoh 1628TD Textile Printer with SPGPrints ReAcid ink. ReAcid inks are "special modified inks used to print on all natural fibers



as well as polyamide Lycra. One of the strong characteristics of these inks is excellent runnability at higher speed production” (SPGprints, UMBRA digital textile inks).

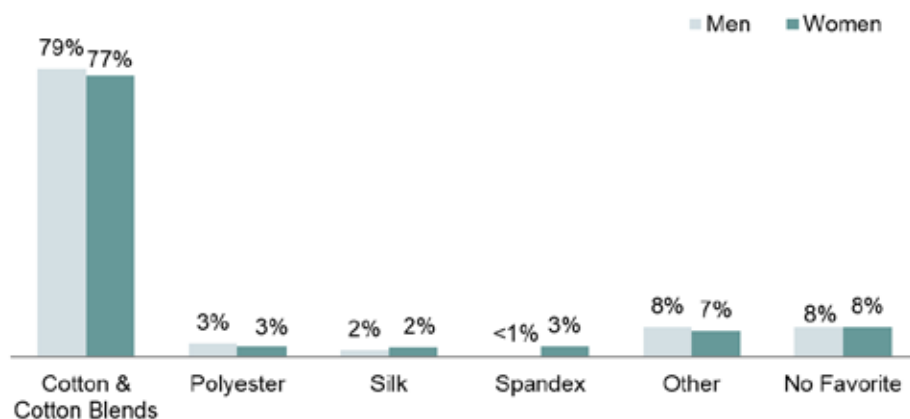
## 2.4 TEXTILE CHOICES

The choice of textiles for the production of the co-created clothes was one of the most important decisions that was in the hands of the designer. This decision affects appearance, fit, printing quality, durability of the garment, and overall comfort and satisfaction of the user who will wear that garment. Besides, the designer should consider the existing limitations in the choice of available fabrics for qualitative digital printing. This subchapter reports on the factors that led to the choice of the two main fabrics used in this project: cotton and silk sateen cotton blend (30% silk, 70% cotton). First, the choice should be made from the available options for digital textile printing. Personal research showed that

most digital textile services print on the pre-treated fabrics of their choice; therefore, the choice could be made after choosing the textile company to work with. For instance, the American company Spoonflower suggests over 20 kinds of fabrics to print on, basically divided into two groups of cottons and polyesters, with a variety of blends and structures available. Other companies seemed to offer either natural fibres or polyester. Therefore, the choice should be made between these two categories.

The goal was to choose fabric that will bring comfort and satisfaction to the user, so the quality of the fabric will reinforce the attachment to the co-created garments, rather than undermine its quality and performance. Prior to testing the available printing services and choices of fabric, my initial intention was to use natural fibres. Intuitively, I felt that mothers nowadays prefer natural fibres for their children and themselves. Indeed, recent research supports that intuitive preconception of mine (see Figure 3).

**What are men's & women's favorite fibers to wear?**



**Fig. 3.** Original figure from Cotton Incorporated Lifestyle Monitor Research agency (2015).

It is important to consider that the garments were intended to become a part of the users' summer wardrobes, and were tested during the summer 2016. It was reported that, in hot weather, polyester garments made the wearer to feel uncomfortable. Conversely, cotton garments gave more comfort in the same weather. In addition, positive cotton characteristics include soft hand feel, good moisture absorbency, and good moisture vapour transmission. Although the feeling of comfort is the significant requirement for textile material, comfort cannot be reliably predicted by any series of different fabric tests due to the fact that feeling of comfort is subjective; it is entirely a perception in the mind of the individual wearer and thus it makes quantified analysis impossible to perform. (Maruf, 2013.)

We also must understand that, environmentally speaking, no ideal choice of fibre exists nowadays, due to the fact that every available option has its impact. For instance, cotton growing is characterised by highest consumption of water when compared to other natural fibres and especially compared to manufactured fibres, such as polyester (Fletcher, 2012: 29). Recycled cotton could become a more sustainable alternative. For example, the Recover Upcycled Textile System that recycle discarded clothes and cutting left overs into new material. Recovered cotton is "produced using none of the water and toxic chemicals required for conventional cotton fibre." (Goldsworthy, 2016.) However, none of the available printing companies suggested such cotton for digital printing. Therefore, my choice was between available pretreated options of polyesters and cottons. After this research was approved by local Vancouver-based company, Clotho, it was a matter of our mutual decision on what fabric to test and to use for making zero waste co-created garments. On my side, I expressed the interest in light weight but not transparent cotton, silk and jersey. On the company side, it was suggested I choose from

several available options of cottons to source for future tests; in addition, Clotho offered for testing and printing a new fibre blend they haven't tested yet, which was silk sateen cotton (30 percent silk, 70 percent cotton). Tests showed that the appearance and performance characteristics of this fabric were suitable for my purposes. Basically, it is silky and a bit shiny on the exterior side of the fabric, and has a cotton feel on the interior side. Therefore, the silk coating made printed colors more vibrant and bright, and the cotton was pleasurable for the body to touch on the inside. After the first co-created prototypes of the scarfs were done on the silk sateen cotton, Clotho executives offered me to print the same designs on silk habotai 8mm to compare the results. Consequently, these three types of natural fibres became the base fabrics for the conducted applied research of this thesis.

## ***2.5 WHITE COLLECTION/ BASICS***

It is important to consider that, due to the limitations of available fabrics for digital printing and the relatively large amount of artworks to co-create final garments with, the amount of white basic styles was decided to be limited to a maximum of three for every age and genre group. In other words, although many ideas, sketches and prototypes were developed through the design process, only several basic styles were chosen to make it to the co-creation stage later on. These basic models include:

- Models from 100% cotton (fabric width 147cm):
  - Men's underwear with elastic band and toy filled with fabric leftovers (Tailored cut, M size, other sizes can be developed if needed, fabric yield 50cm)
  - Child multifunctional short skirt/dress/top with elastic band and pockets (zero waste square cut, can fit size 3-10, fabric yield 50cm)

- Child multifunctional dress/skirt with elastic band and pockets (zero waste square cut, can fit size 5-10, fabric yield 60cm)
- Adult multifunctional skirt/dress with elastic band and pockets (zero waste square cut, one size fits S, M, L, fabric yield 150cm)
- Adult straight dress with straps, elastic band and with pockets (zero waste square cut, one size fits S, M, L, fabric yield 100cm)

- Models from Silk Sateen Cotton (fabric width 140cm):

- Scarf set: adult scarf and child scarf or child skirt (2-3yo) and care bag (zero waste cut, one size, fabric yield 100cm)
- Child dress with pockets and with open back and bow-knot (zero waste tailored cut, size 10-15 yo – fabric yield is 120cm, size 6-10yo – fabric yield is 100cm)
- Child multifunctional skirt/tops/dress with elastic band and pockets (zero waste square cut, can fit size 3-10, fabric yield 60cm)
- Adult straight dress with pockets and textile belt (tailored zero waste, one size fits S, M, L, fabric yield 140cm)
- Adult dress with straps and pockets (zero waste square cut, one size fits S, M, L, fabric yield 150cm)
- Adult multifunctional skirt/dress with elastic band and pockets (zero waste square cut, one size fits S, M, L, fabric yield 150cm)

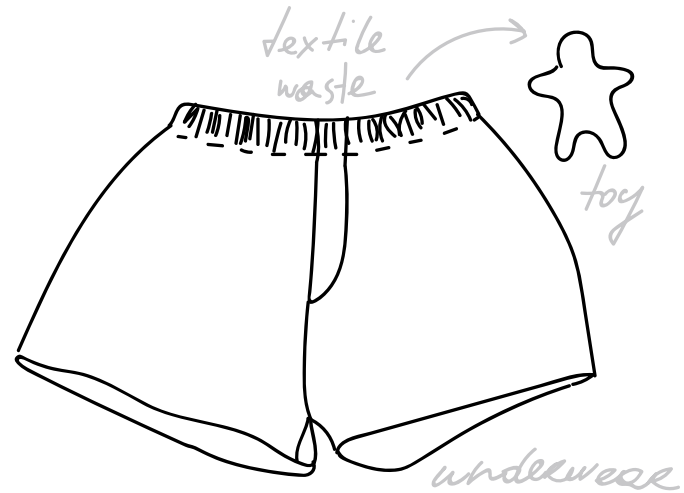
- Models from Silk (fabric width 132cm)

- Scarf set: adult scarf and child scarf and care bag (zero waste cut, one size, fabric yield 100cm)

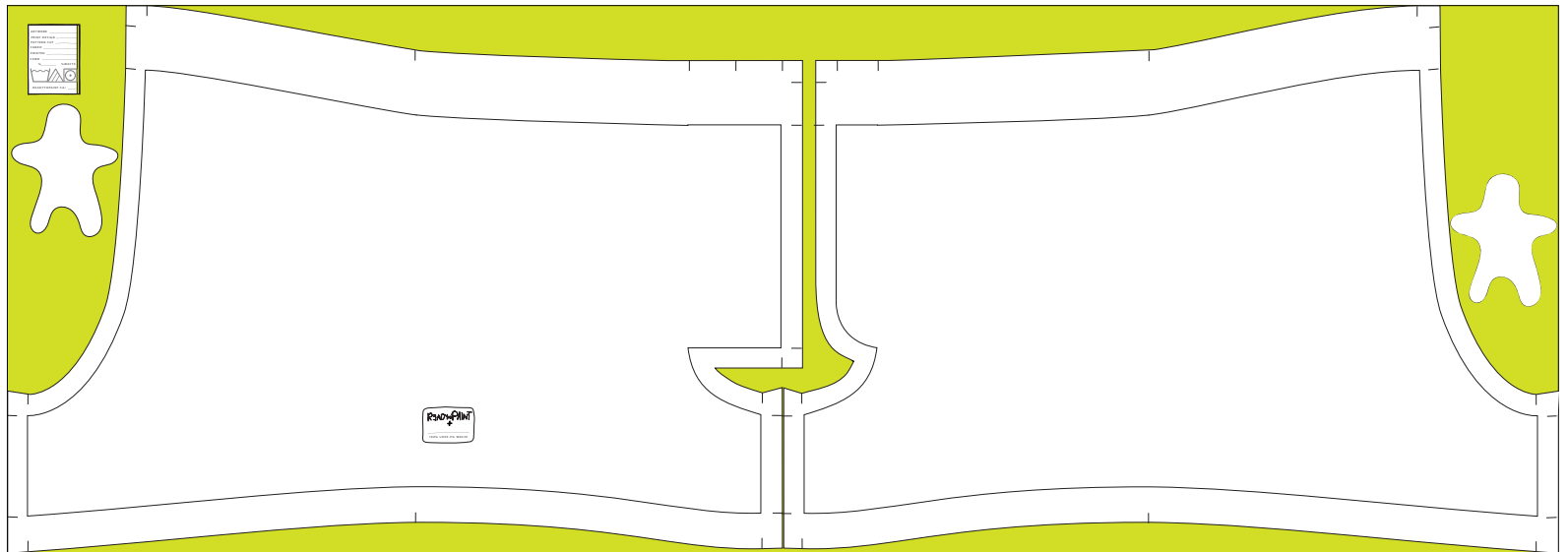
These models' sketches and pattern cuts are presented further in Figures 4-21 in following pages.

In general, these styles were chosen as ones thought suitable for the different types of print patterns that will further be developed from the children's artworks. Also, I aimed to send the co-created objects to every participant and test how the developed print patterns will be assessed in different cases, if they are printed on skirt or dresses or men's underwear. Overall, they look contemporary but timeless (in my design opinion) and they are zero waste, and that meets the original goal. Moreover, this set of basic zero waste styles can be expanded with other styles for men, children, and women in future.

## MEN'S UNDERWEAR + TOY



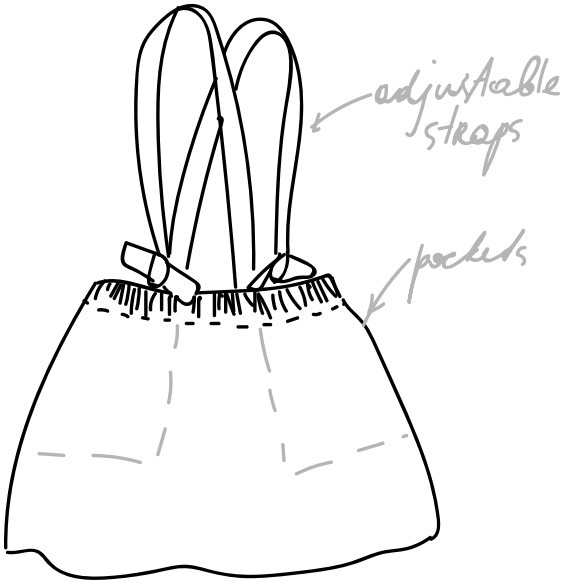
**Fig. 4.** Sketch for men's underwear with toy that is filled with textile waste from underwear cutting stage.



**Fig. 5.** Marker of men's underwear. label and toy. Cotton. Fabric yield 50 cm. **Fabric width 147 cm.** Both measurements may vary: if negative space (textile waste) increases, the size of toy pattern should be enlarged accordingly.


# CHILD SKIRT

**Fig. 6.** Sketch for child skirt with adjustable straps or with no straps at all. Skirt with two pockets and elastic bands, can be modified into dress for smaller child and for the top for bigger child.



**Fig. 7.** Marker for child multifunctional short skirt/dress/top with elastic band and pockets. Zero waste square cut. Fits size 3-10. Cotton. Fabric yield: no straps - 40cm, with straps or longer skirt -50-70cm. Fabric width 147cm.

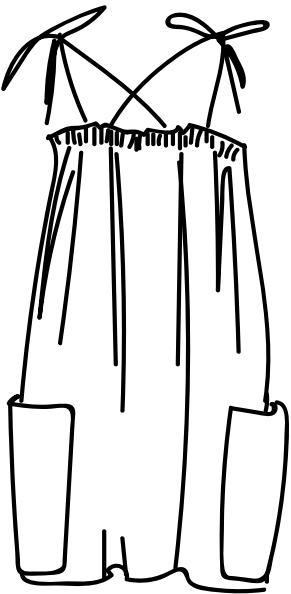
For Silk Sateen Cotton: fabric yield 60cm, fabric width 140cm. The same marker is modified: pockets' details, back and front details are narrowed down according to new width.

<div>Child_Skirt_Front_</div> <div></div>	<div>Child_Skirt_Back_</div>	<div><div><div>Child_Skirt_Pocket1_</div></div><div><div>Child_Skirt_Pocket2_</div><div></div></div></div>
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# CHILD DRESS

**Fig. 8.** Sketch for child dress with adjustable straps. Two outside pockets and elastic band on top, can be modified into skirt or top for bigger children.



**Fig. 9.** Marker for child multifunctional dress/top/skirt with elastic band and two outside pockets. Zero waste square cut. Fits size 5-10. Cotton. Fabric yield 60cm or longer if longer length is desired. Fabric width 147cm.

<div>Child_Dress_Front</div>	<div>Child_Dress_Back</div>	<div>Dress_Pocket1_</div> <div></div> <div></div> <div>Dress_Pocket2_</div>
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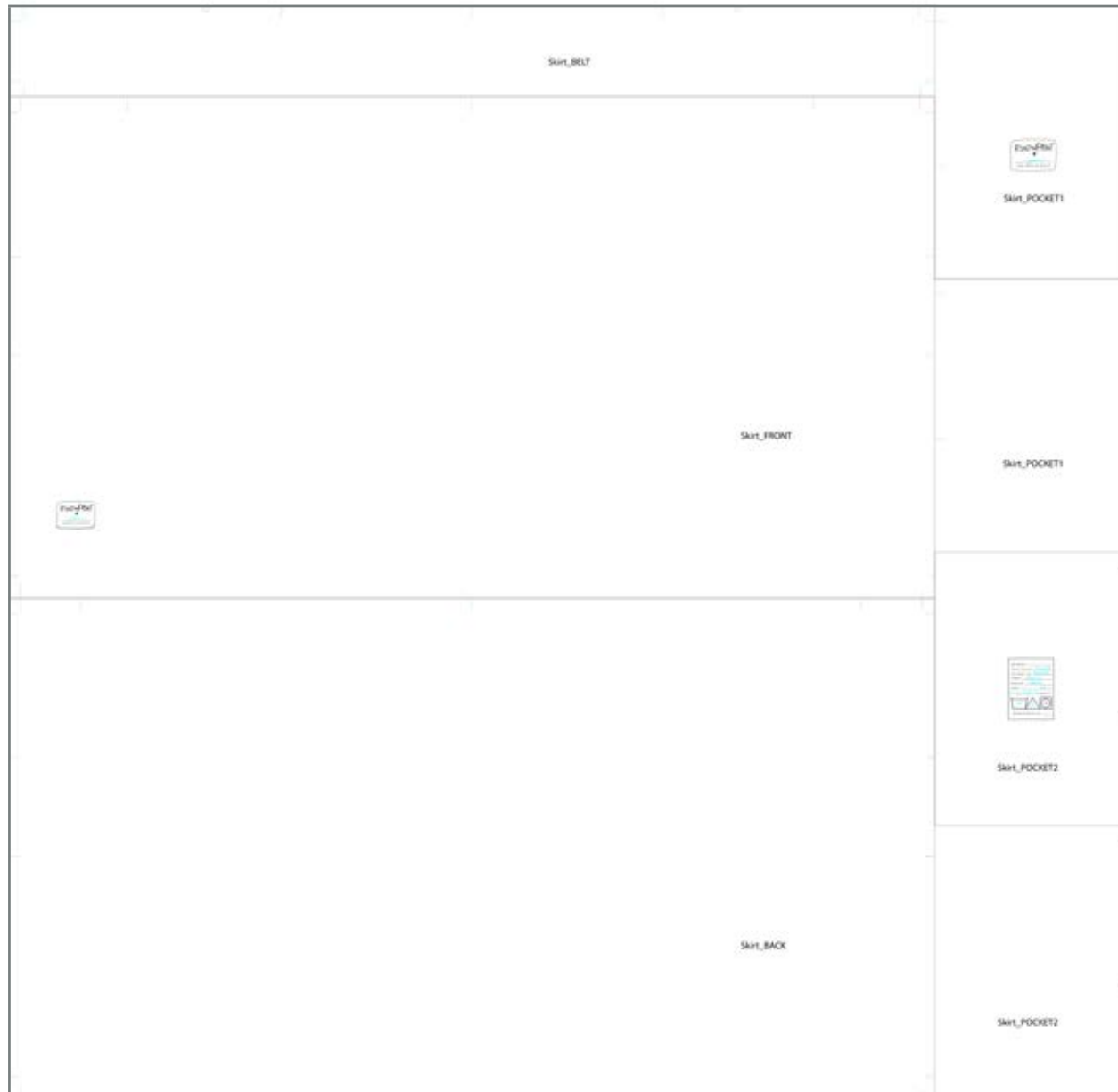
## ADULT SKIRT

**Fig. 10.** Sketch for adult skirt or dress with hidden straps or hangers. Skirt with two pockets in seams and waist elastic band. Can be modified to a dress.



**Fig. 11.** Marker for adult multifunctional skirt/dress with elastic band and two pockets in seams. Zero waste square cut, one size fits S, M, L. Cotton. Fabric yield 150cm. Fabric width 147cm.

For Silk Sateen Cotton: fabric yield 150cm, fabric width 140cm. The same marker is modified: pockets' details, back and front details are narrowed down according to new width.



## ADULT DRESS

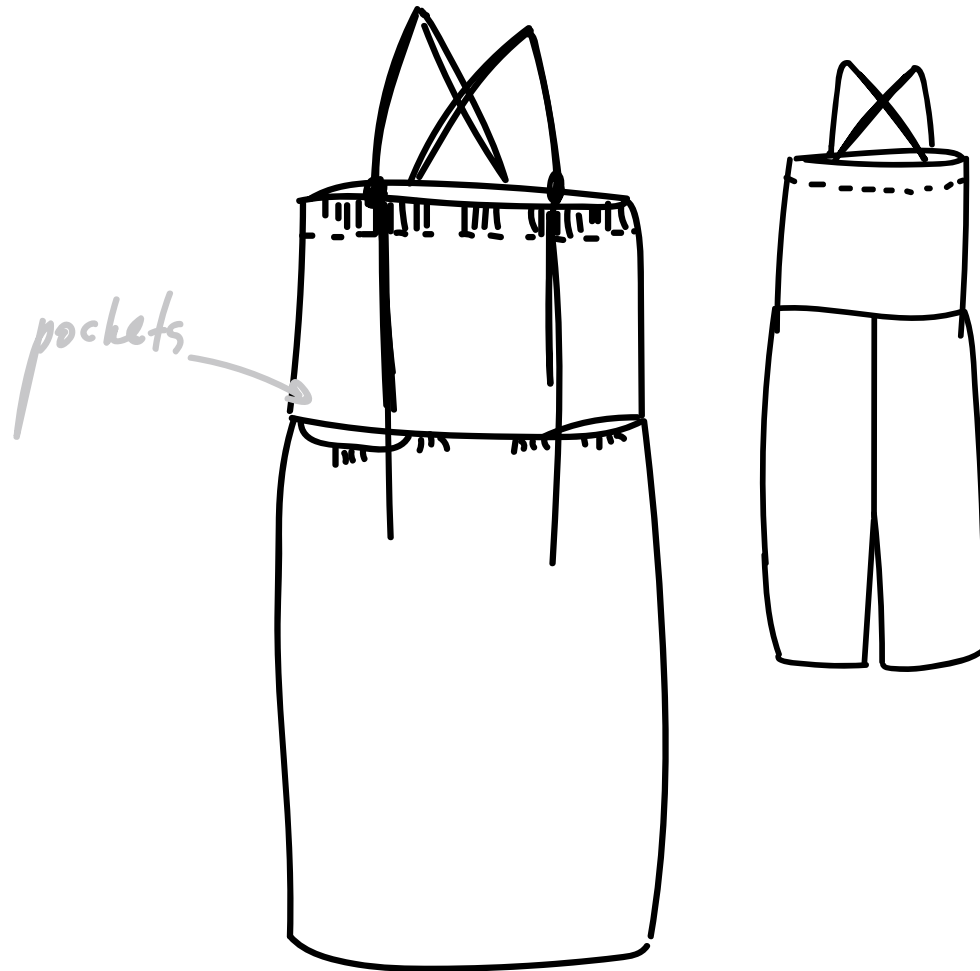


Fig. 12. Sketch for adult dress with adjustable straps and two pockets in waist seams and top elastic band, front view and back.





## ADULT DRESS

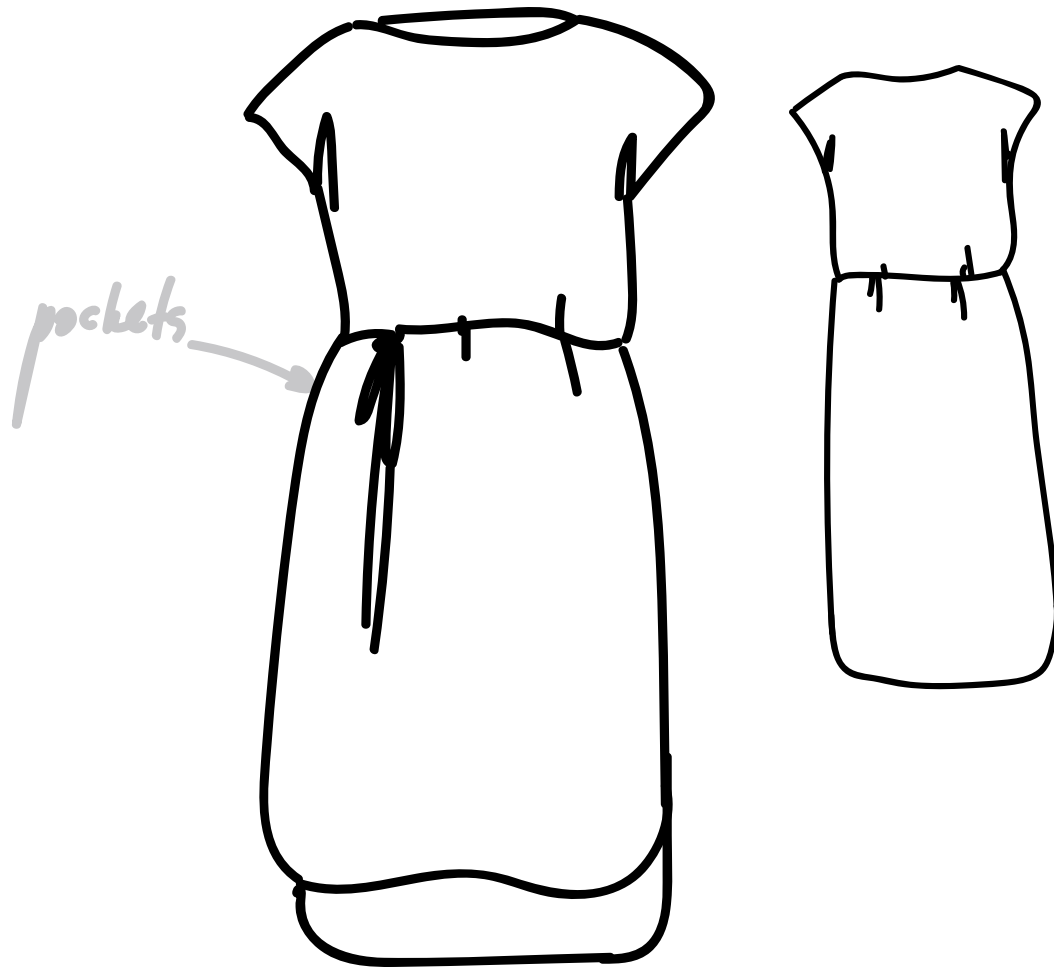


Fig. 14. Sketch for adult dress with adjustable straps and two pockets in seams, front view and back.

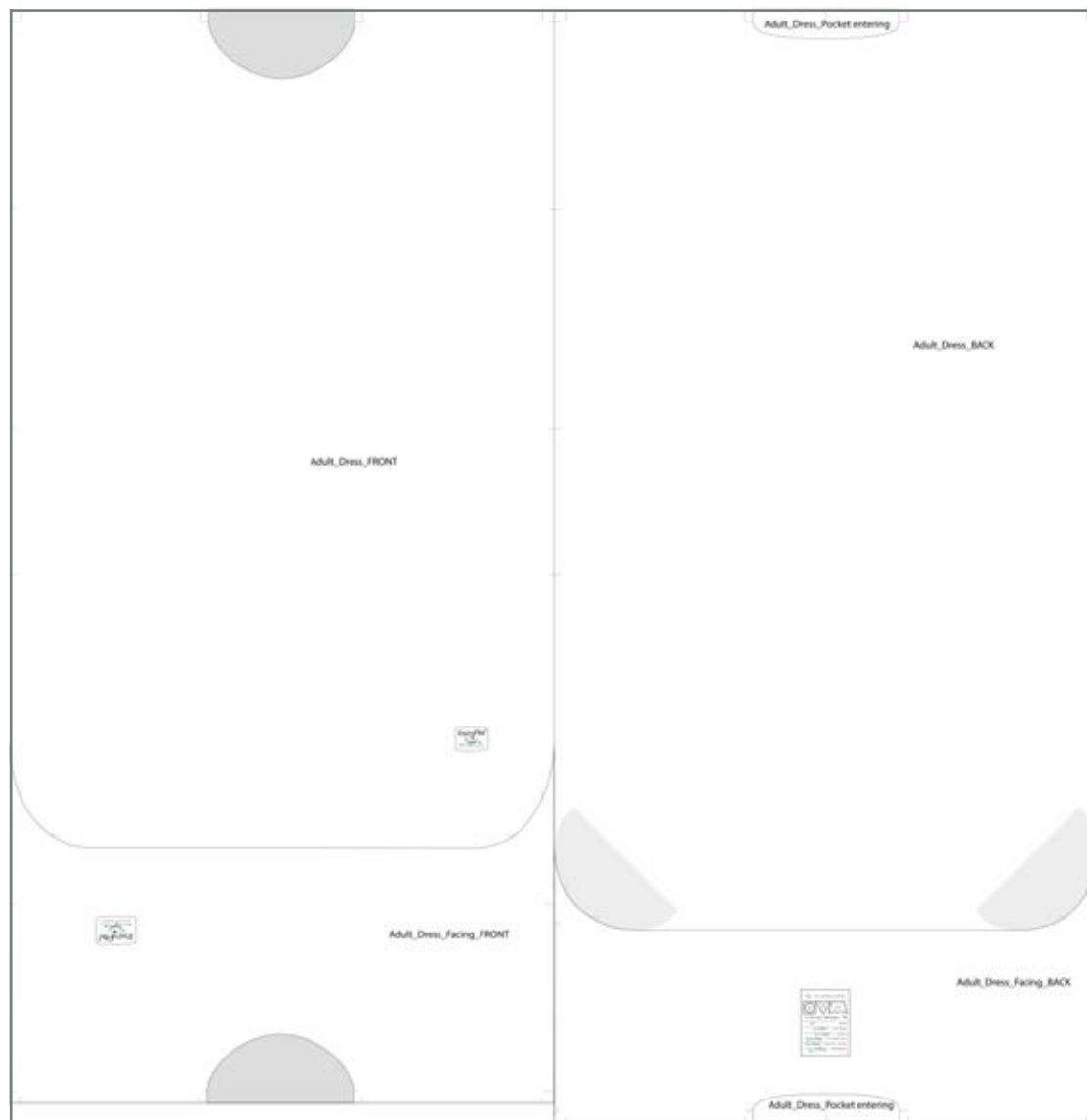


**Fig. 15.** Marker for adult dress with straps and with pockets. Zero waste square cut, one size fits S, M, L. Silk Sateen Cotton. Fabric yield 150cm. Fabric width 140cm.

## ADULT DRESS



**Fig. 16.** Sketch for adult dress with two pockets in seams and textile belt, front view and back.



**Fig. 17.** Marker for adult straight dress with pockets and textile belt. Zero waste tailored cut, one size fits S, M, L.  
Silk Sateen Cotton. Fabric yield 140cm. Fabric width 140cm.

## CHILD DRESS



**Fig. 18.** Sketch for child dress with two pockets in seams and and with open back and bow-knot, front view and back.





**Fig. 19.** Marker for child dress with pockets and with open back and bow-knot. Zero waste tailored cut. Silk Sateen Cotton. Fabric width 140cm. Fabric yield: size 10-15 yo – 120cm, size 6-10yo – 100cm.

## SCARF SET

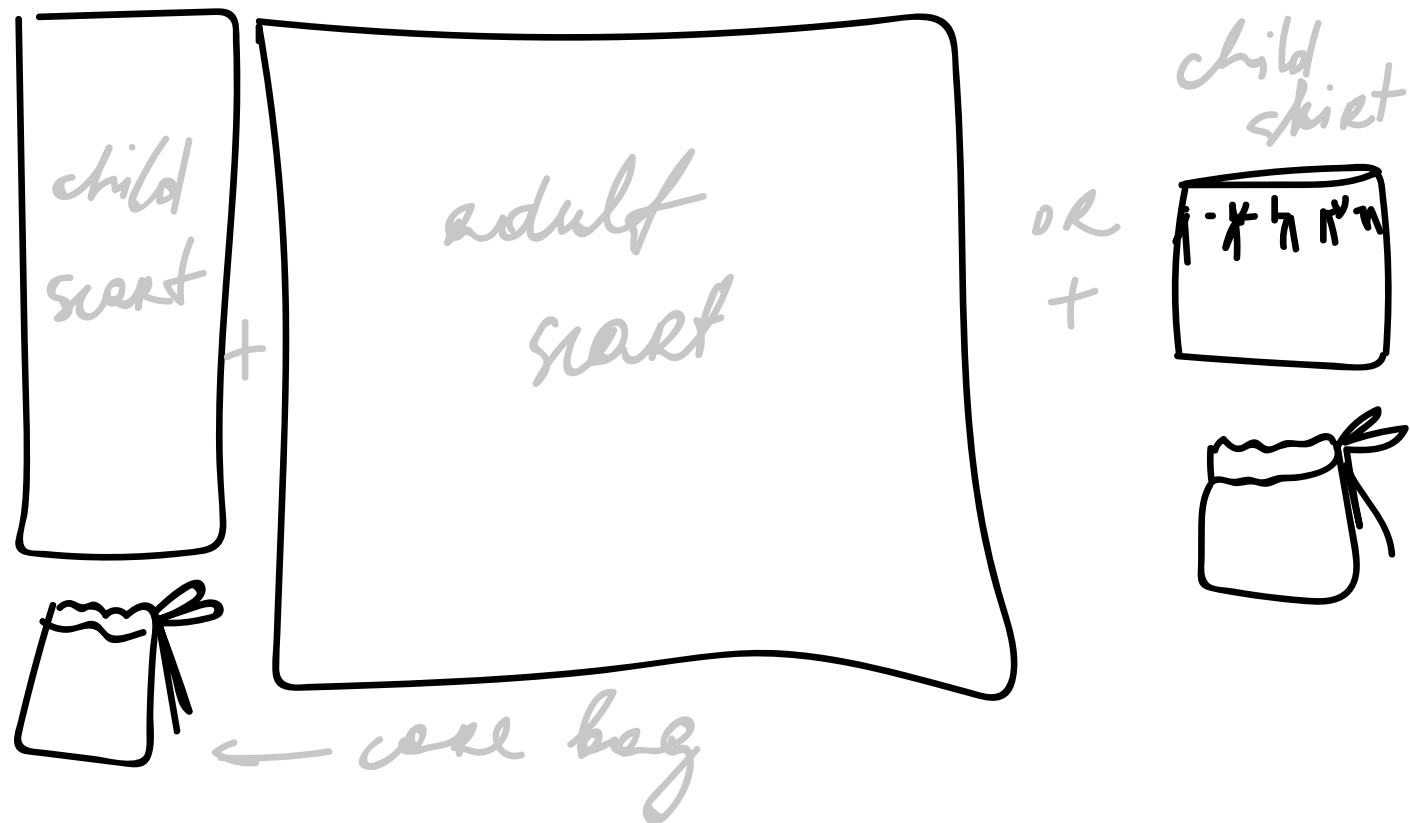
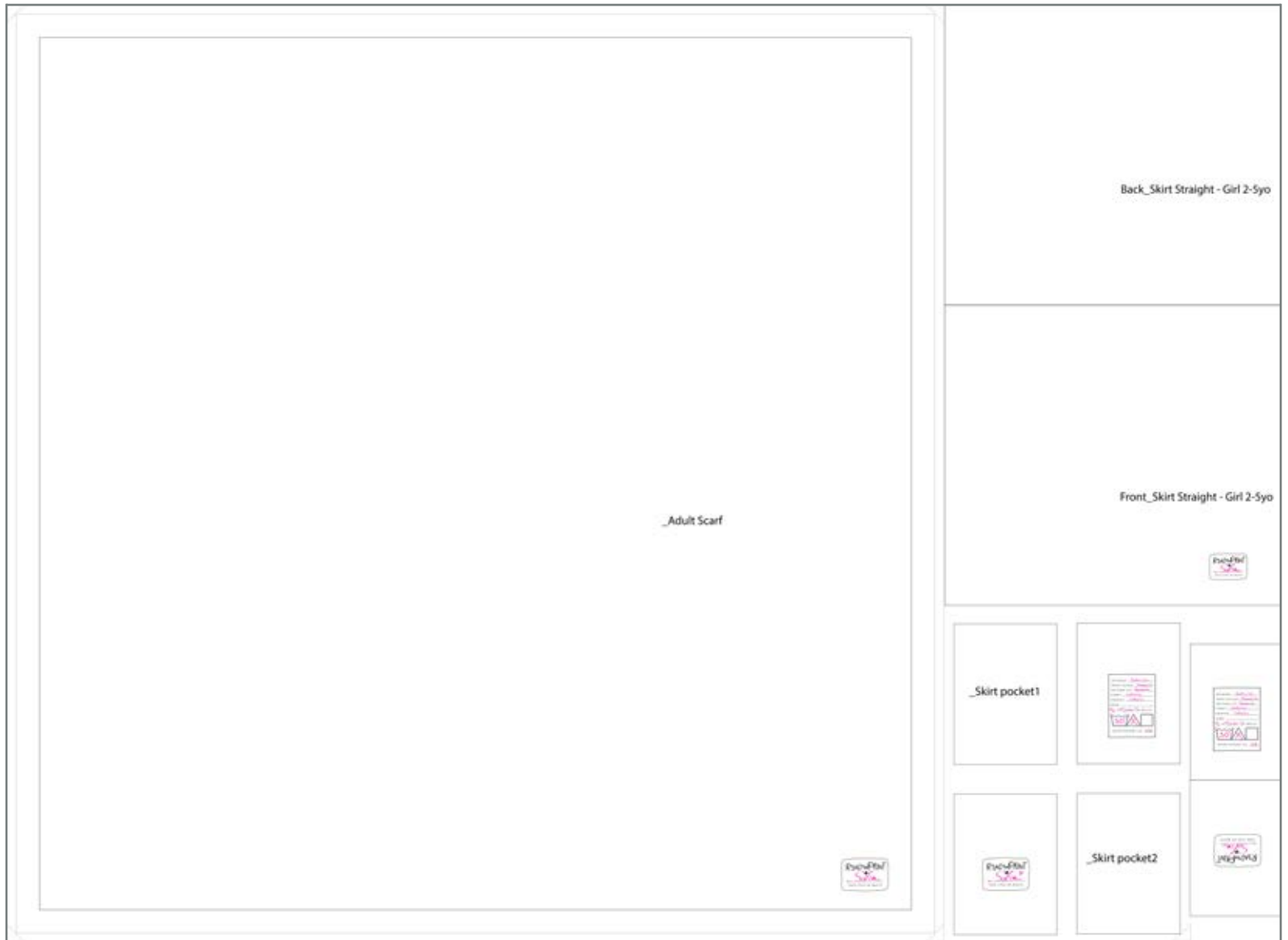


Fig. 20. Scarf set: adult scarf and child scarf or child skirt (2-3yo) and care bag.



**Fig. 21** Marker for adult scarf and child skirt (2-3yo) and care bag. Zero waste cut, one size. Silk Sateen Cotton. Fabric yield 100cm. Fabric width 140cm.  
For Silk fabric and set of adult scarf+child scarf+ care bag: fabric width 132cm, fabric yield 100cm.

## 2.6 ARTWORK CHOICES

In the previous chapter, the submitted drawings were presented. Even though most of those drawings could be developed into placement prints or repeated patterns, this would be too broad and time-consuming for the scope of this thesis. Therefore, a choice of the artworks that were to be developed into print patterns had to be made. This subchapter will introduce the artworks that were chosen to further become co-created print patterns.

The main criteria for my choice were:

- Diversity of style and technique. Some artworks were drawn by markers, some were made with watercolours, another with white paint on black paper, and etc. The goal was to take a various artworks as starting point and achieve a diverse outcome through print pattern making process.
- Ability to execute different print development methods. The shapes and subjects of the pictures were chosen according to their diversity so that I could research and demonstrate various methods of working with children's drawings in order to make print patterns.

I visualized a vast range of possible print patterns from the artworks sent to me, but the ones that made it to the final stage were the ones that attracted me intuitively, and met the discussed criteria. The final choice presented in following images 110, 111. Drawings are slightly edited (brightness, background are edited, and main motif and elements are cut from the rest of the picture) for the presentation purposes.



i110. Flowers by Sophie M., 5yo.



i111. Drawings by children chosen for further print pattern work. Slightly edited by designer.



## 2.7 PRINTS DEVELOPMENT METHODS

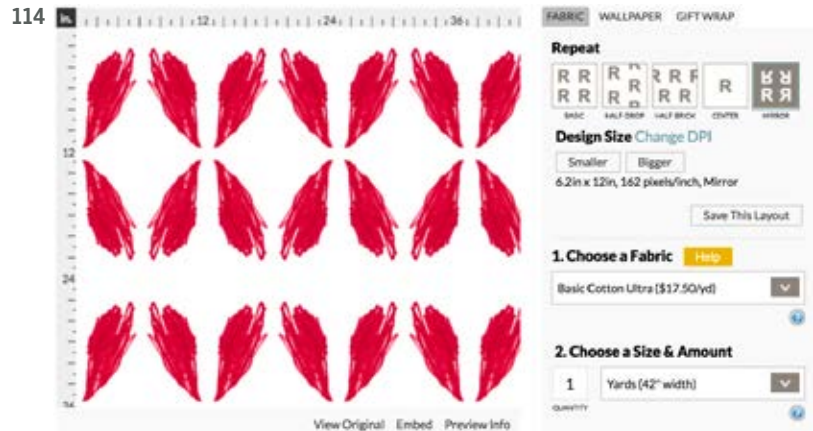
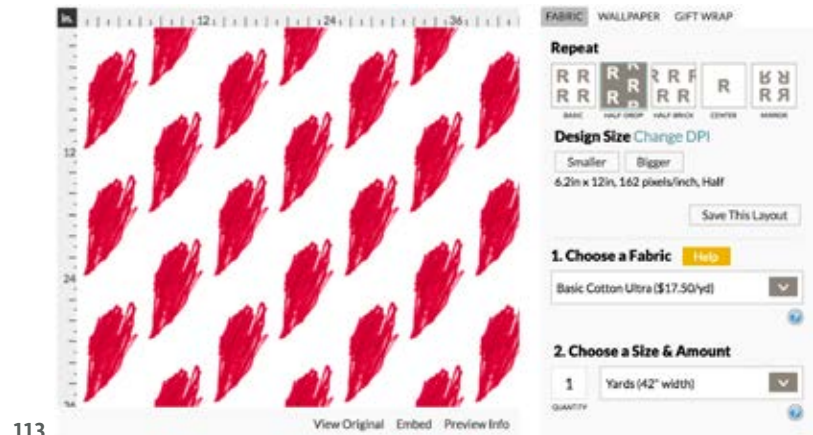
The next step, after choosing the artwork, was print development. During the design stage, I practice several methods to research the possibilities and find the most time-effective method. From my personal experience, the cost of manufacture of the commercial repeated print pattern in the textile world can vary from 200 to 1000 euro per professionally repeated pattern. In case of the Ready-to-paint practice, this cost would be embodied in co-created garment, thus it should be lessened considerably in order to make the ready garment affordable to average consumer. Through experiments with different methods I tried to figure out if there are methods that can lessen the hourly work of the textile designer, or if this part of the work can be automatized.

I find that regular patterns are easier and faster to make, and this process can even be automated. For instance, Spoonflower provides its users with a pattern creation tool on their webpage, where user's design unit can be repeated into four most common regular networks such as: basic – square network; half-drop network; half-brick or brick network; and, mirror network. This set can be easily expanded with a diamond network following the same algorithm of working with an uploaded unit. Pictures 112-114 shows created repeated patterns with three different units – edited children artworks using pattern creation user interface on Spoonflower online platform. (www.spoonflower.com).

**i112.** Basic network repeated pattern created through the Spoonflower pattern creator tool. Screenshot of working process.

**i113.** Half-drop network repeated pattern created through the Spoonflower pattern creator tool. Screenshot of working process.

**i114.** Mirror network repeated pattern created through the Spoonflower pattern creator tool. Screenshot of working process.



However, I find this method of creation patterns being too straightforward, easily recognizable and subpar, thus in my textile design work for the Ready-to-paint project I attempted to create mostly irregular seamless patterns or designed placement prints.

As was discussed previously, digital printing technology has advantages, as well as issues, that need to be considered when developing patterns and prints for digital printing. First of all, there are no limitations in the amount of colors used, when compared to limited amounts available in traditional rotary or screen printing. Nevertheless, I did try on a few examples to separate colors and create patterns that would be suitable for traditional printing methods. I did so for the sake of demonstrating that commercial repeated patterns can be created using children's drawings.

Moreover, following recommendations were taken into account:

- It is better to avoid large areas of dark color or any plain color

Large areas of dark flat printed colour can be printed with different intensity from a computer screen image. Black ink in large amount can appear more vintage than it might be originally planned. It is advised to break up large dark areas of print design. (Kerr, 2015.) Moreover, a Clotho executive suggested not using large areas of plain color, any color, due to the fact that the machine can gradually run out of ink and it will affect the color tone on the printed yield of fabric. (personal conversation, 20 October 2015). The printing of one developed pattern print actually encountered the problem with large amount of black color and appeared to be more brown than black. After this problem was recognized, the print design was changed to dark blue tone and the fabric turned more fresh- and vibrant looking.

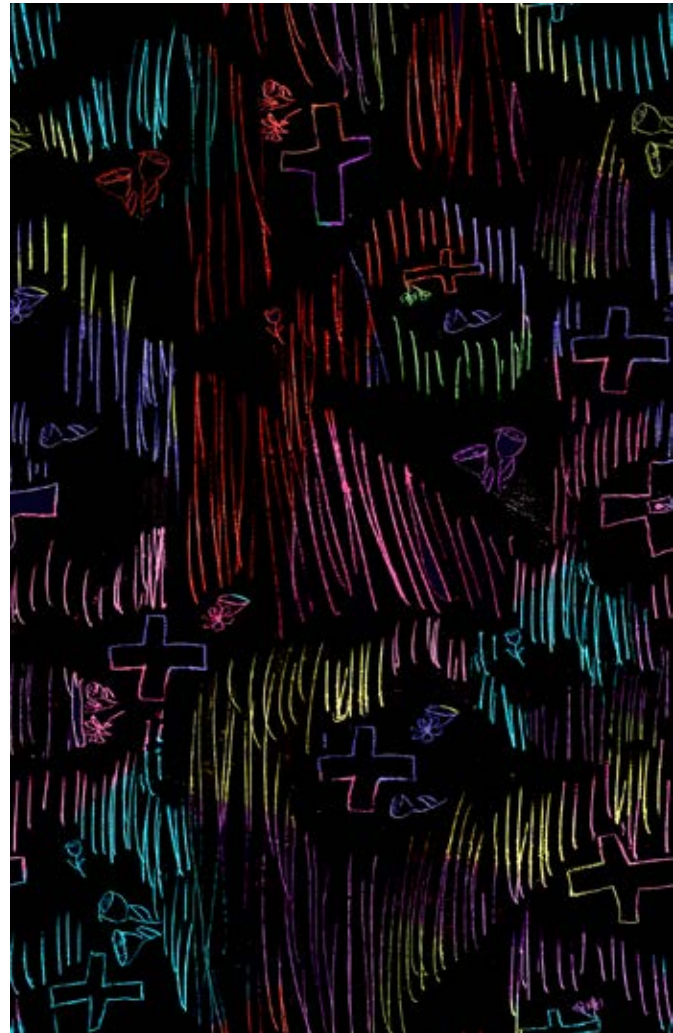
- It is suggested to avoid subtle tone variations

When images are seen on computer screens they are projected at the viewer from a light source in high resolution. When the image is transmitted from a projected one to the textiles using inks, the result can look dull. Basically, on a screen three similar shades of grey can be recognizable, but on textile these areas may appear as a solid grey spot. (Kerr, 2015)

Further, I bring out the main print development steps for the 14 prints that were co-created with the children's artworks, including seven repeated patterns and seven placement prints, which imitate the existence of the repeated pattern diaper. First, I present the repeated patterns with rectangular diaper, created with drawings of six child participants. Then, I present the working process with other drawings that were created as placement prints in order to save design time.

### **NIGHT FIELD BY LIA**

Drawing by the oldest participant Lia (10 y.o.) was sent by her mother in the set with other her drawings; her mother mentioned that this drawing was made for Halloween. It was chosen for its interesting background texture, characterized by a gradient of vibrant colors on a black background. As the designer, I decided to separate parts of the background with lines, flowers and crosses, and create texture of a seamless irregular print pattern using these parts. The final outcome preserved mostly the background part of the original drawing, and didn't include the figure of the man, the creature, hills and graves. In my opinion, the overall impression changed from scary to dark romantic. Color editing was performed for better printing results. The repeat size of the final print pattern is 27 x 42 cm, total approximate amount of designer's working hours is three, programs used for design work – Adobe Photoshop, Illustrator.



**i115.** Original drawing sent by mother (on the left) and the repeated pattern (on the right)

**i116.** Page on the right. Original drawing sent by mother, edited elements by designer, and 2 colourways of the repeated pattern.

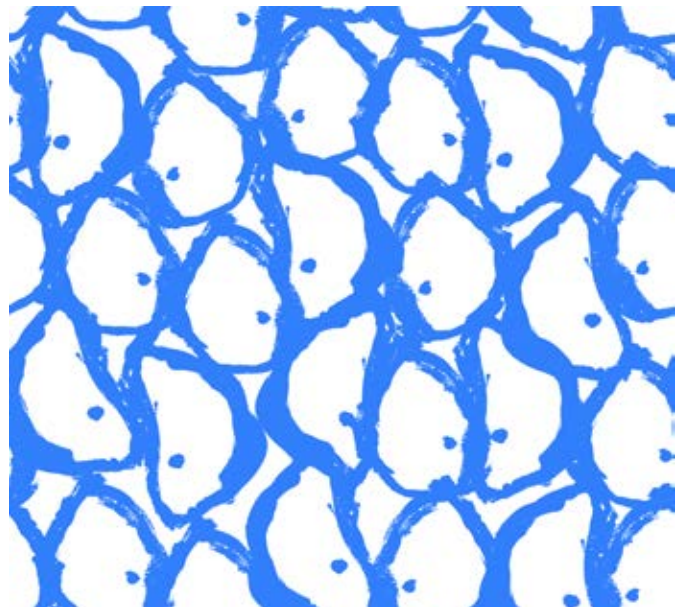
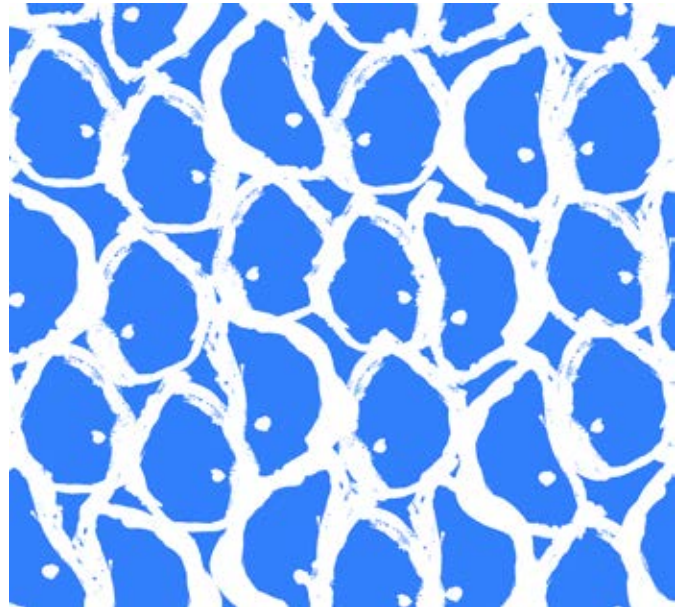
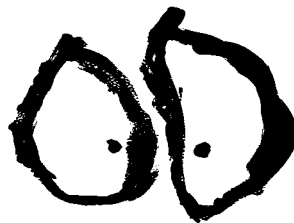
## ***BOOBS BY LIZA***

Drawing by four-year-old, Liza, was sent in the second set of drawings made after directions were given. In fact, this is a single drawing chosen from all drawings sent after directions were explained to the participants. In her skype interview, Liza was telling me that she loves “boobs” and repeated this multiple times, she also shared this during her interview conducted by her mom for the project. When she was asked, what are her three favourite things in entire world, her answer was: boobs, a panda toy and a book about a dragon. (Interview Liza Itzhoki, 23 April 2015). After, I asked her mother if this is a pair of breasts drawn in the picture she sent, and she confirmed my guess.

Photoshop was used by designer to make decisions on what is important to keep and what is better to delete for better quality of the print pattern and professional final look of the print.

Further work is produced in Illustrator in order to find the positions of the elements and create a seamless print pattern. Colors were changed. Liza mentioned in her interview that her favorite colour is blue and she wants a blue dress. The color was chosen according to her initial preferences.

The repeat size of the final print pattern is 64 x 58 cm, resolution 150ppi, total approximate amount of designer’s working hours is three, programs used for design work – Adobe Photoshop, Illustrator.

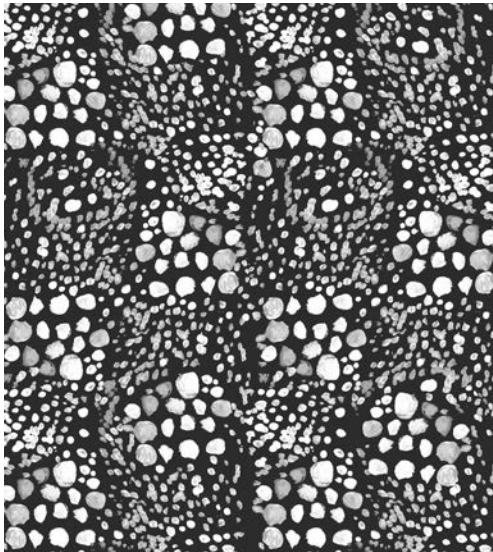
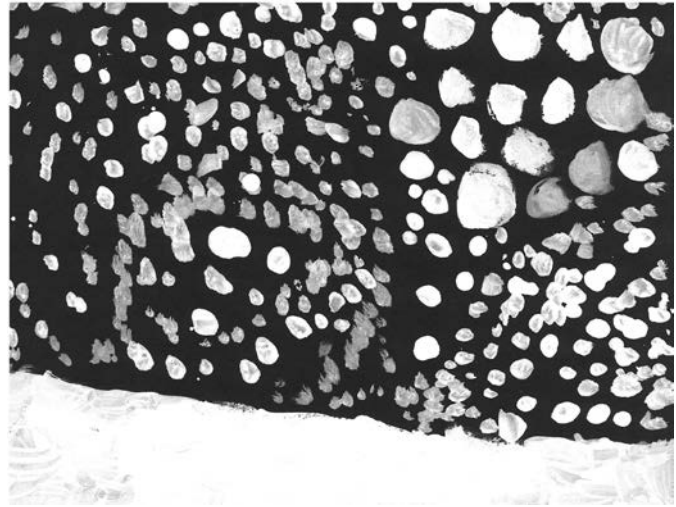




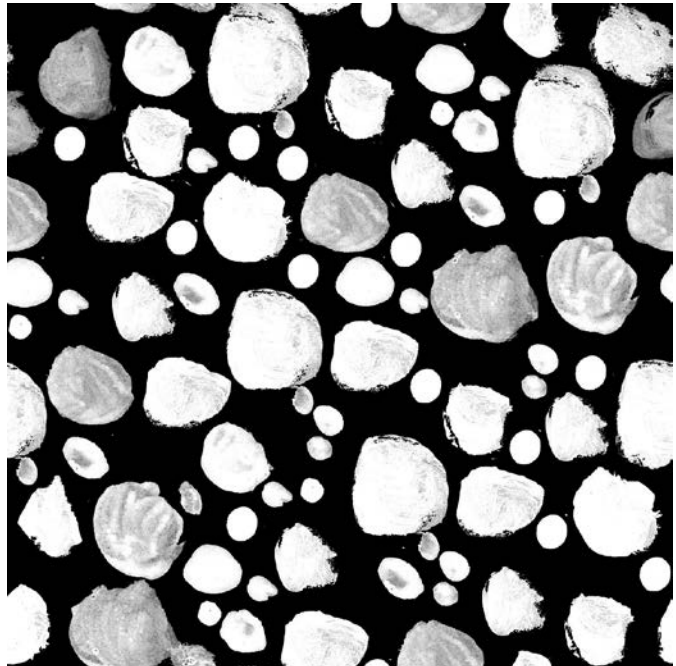
### ***SNOW BY SOFIA S.***

The scan of original drawing made by Sofia from Toronto, Canada at the age of four, was sent by her mother with first set of drawings “without directions”. Even though this drawing would make a great placement print as is, it was decided to use it to create a dot texture pattern. Therefore, separate dot elements were chosen for the following design work. Two print patterns were created: one that preserved more of the initial placement of the dots, and the second is where the dots were reorganized to create an irregular flow of dots for a more classical look of a dot pattern.

The repeat size of the final print pattern is 16 x 16 cm, resolution 150ppi, total approximate amount of designer’s working hours is three, programs used for design work – Adobe Photoshop.



**i117.** Original drawing sent by mother (on top), the first repeated pattern (on the left), final repeated pattern (on the bottom right)

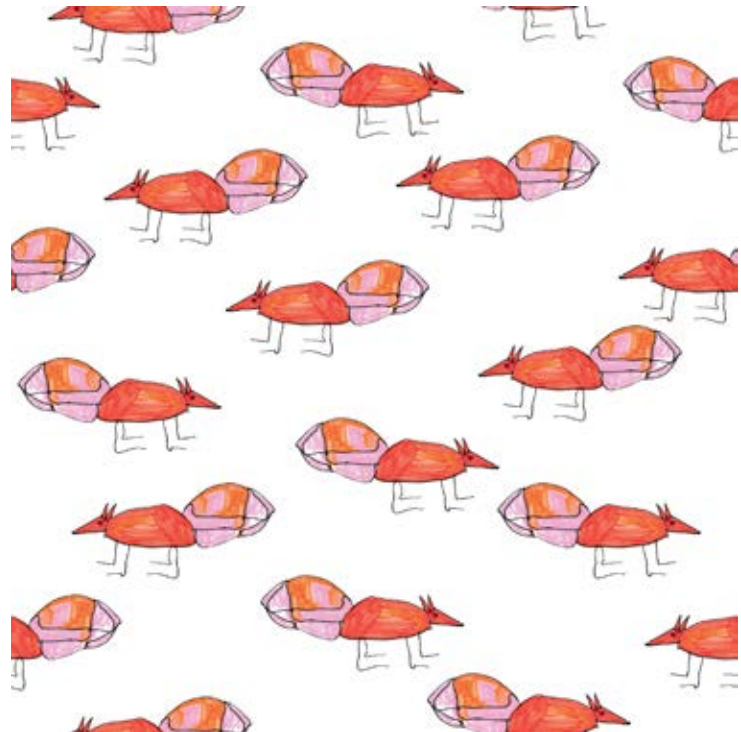




### ***FOX OR SQUIRREL BY SOFIA N.***

The scan of original drawing made by Sofia at the age of five, was sent by her mother with first set of drawings “without directions”. All the scans she sent were in a relatively clean condition already, therefore not much cleaning procedures in Photoshop were required. This drawing was chosen to use for making a simple irregular pattern with one main motif – an artist’s drawn animal. The final pattern can be used and printed either vertically or horizontally.

The repeat size of the final print pattern is 45 x 45 cm, resolution 150ppi, total approximate amount of designer’s working hours is one. Programs used for design work – Adobe Photoshop, Illustrator.



**i118.** Original drawing sent by mother (on top), the edited drawing by designer (on the left), final repeated pattern (on the bottom right)

## HEARTS BY SOFIA N.

The drawing of heart was taken from the scan sent by Sofia's mother. The scan was of a good quality and high resolution, which enabled significant changes in size of the original drawing.

This drawing was chosen because the participant shared the story that her daughter is drawing hearts for her mother all the time, leaving it in pockets or presenting them on different occasions. These hearts play an important role in communication for the family. This drawing of a heart was twice printed as a placement print on a sweatshirt, after it was separated from the rest of a drawing and significantly enlarged. Next, it was used for imitation of repeated pattern used for printing underwear for her father. Thirdly, the repeated pattern was created with this heart. For the repeated pattern, the color of a heart was changed to black. The reason for that was the observation that the participant mother prefers black as a color in her wardrobe. Therefore, the heart shape was desaturated and amount of colors reduced into one. In the case of this pattern, as the designer, I made a decision to add the background. The created background imitates the "transparency" background from Photoshop, the mode when there is no background layer in the design file. The idea behind decision is to visualize that any background can be added and that the possibilities are endless.

The repeat size of the final print pattern is 60 x 90 cm, resolution 150ppi. Total approximate amount of designer's working hours used for placement print with single heart is two, for the placement print imitating repeated pattern half and hour, for repeated pattern, four hours. Programs used for design work – Adobe Photoshop, Illustrator.

**i119** Original drawing sent by mother (on top), final repeated pattern (on the bottom)



## PARROTS BY SASHA

The drawing units of parrots were taken from the scans of original drawings made by Sasha from Kaliningrad, Russia (she now lives in Berlin, Germany) at the age of five. The chosen units were organized into one repeated irregular pattern with a parrot theme. This print pattern was used for printing men's underwear for Sasha's father. The repeat size of the final print pattern is 35 x 30 cm, resolution 150ppi. Total approximate amount of designer's working hours is three. Programs used for design work – Adobe Photoshop, Illustrator.



i120. Original drawing sent by mother (on top right), the edited drawing by designer (on the bottom right), final repeated pattern (on the bottom left).

### **SUMMER FLOWERS BY SOPHIE**

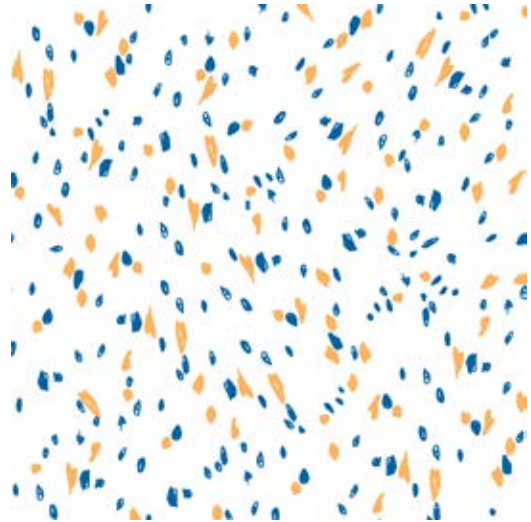
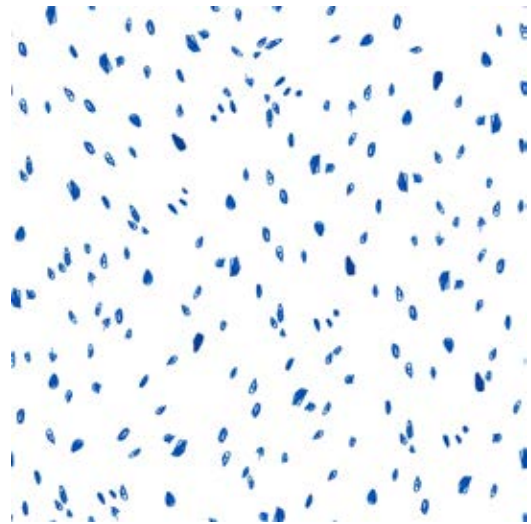
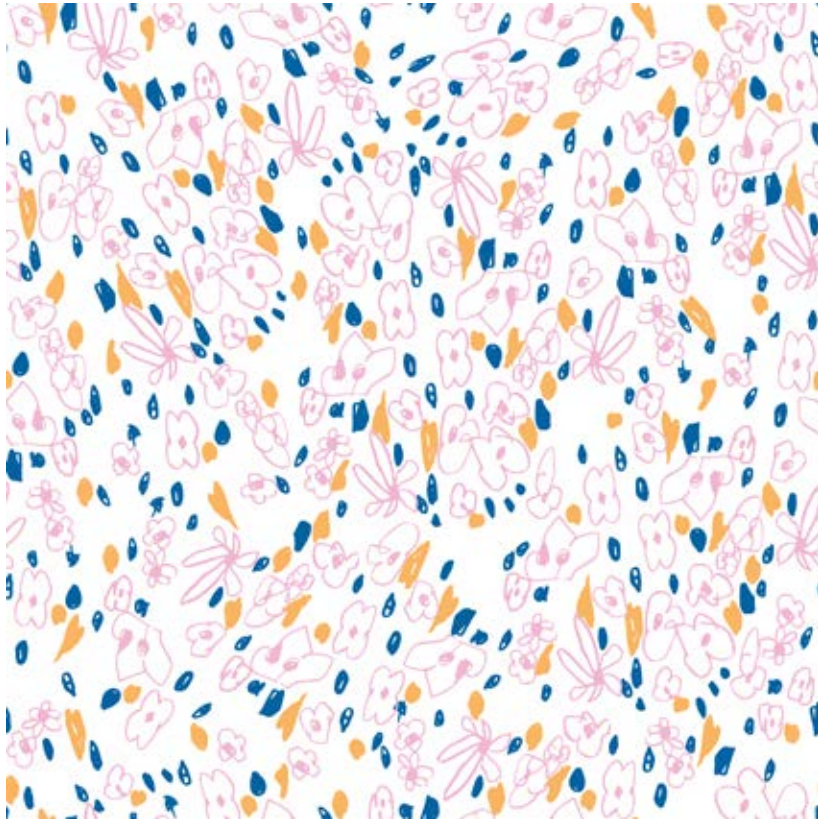
The scan of original drawing by Sophie from Paris, France, drawn at the age of five, was sent by her mother as a part of first set of drawings “without directions”. The original drawing already reminds one of a textile pattern, thus it was taken as a starting point and I tried to preserve the original placement of the elements. However, the scan quality was not good enough for enlarging the picture and a quality digital printing result; therefore, design manipulations were required. The elements were separated into layers with one motif, and those layers were transformed into vector files later on, which enabled further adjustments to color, size and line quality for better printing results. The designer’s aim was to achieve the look of professional commercial flower pattern. The final repeated pattern is suitable not only for digital printing, but for rotary printing too, because the layers are separated by colors (three in total) and the repeat is suitable for rotary production. These patterns, in fact, can be printed as three different patterns: only dots; dots and heart; dots, hearts and flowers—and the colors can be changed easily.

The repeat size of the final print pattern is 32 x 32 cm, resolution 150ppi, total approximate amount of designer’s working hours is five. Programs used for design work – Adobe Photoshop, Illustrator.



**i121.** Original drawing sent by mother (on the left), the edited drawing by designer (on the right).





i122. Final set of repeated patterns.



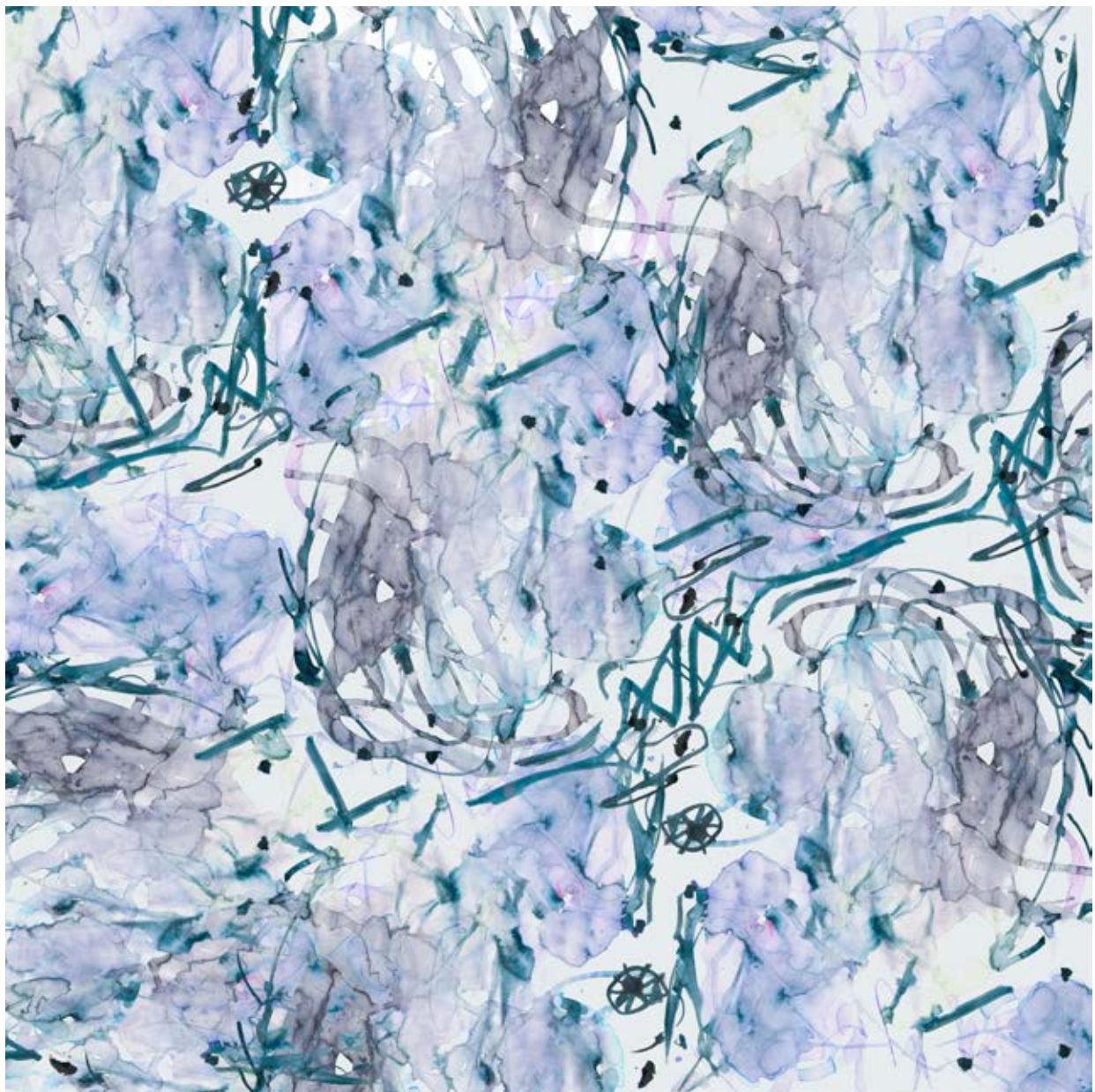
### **ABSTRACT BY SOPHIE**

This scan of original drawing by Sophie from Paris was chosen to make a one-of-a-kind abstract print. As the designer, I cleaned the original picture from little non-abstract elements and the signatures. I did so to preserve the abstract feel of the final print. The size was enlarged to create an even more abstracted drawing for the final garment. My initial intention was to create a repeated pattern, but after three hours of work, I decided to stop the work at the stage where the impression of the repeated pattern was achieved and the print was at the size that was enough for an adult size dress, as well as for child's dress. This print was used for both dresses printed on silk sateen cotton. and for silk scarfs.

The size of the final placement print imitating repeated pattern is 100 x 150 cm, resolution 150ppi, total approximate amount of designer's working hours is three. Programs used for design work – Adobe Photoshop.



**i123.** Original drawing sent by mother (on the top), the edited drawing by designer (on the bottom), final placement print (on the left page).

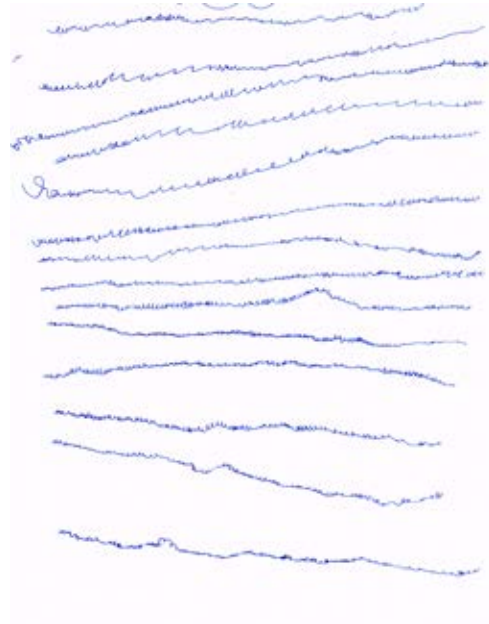




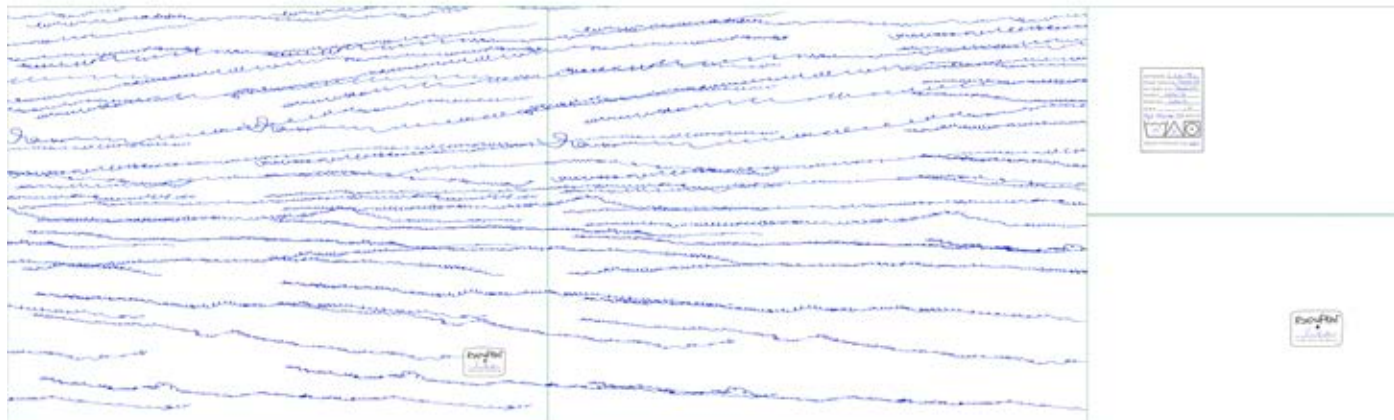
## WRITING BY KIRA

This drawing was made by Sasha's younger sister Kira at the age of three. It could be repeated into a contemporary-looking stripy pattern; instead, for test purposes, it was used for placement print that imitates such a repeated pattern. The original file was cleaned from the paper background in Photoshop, and transferred into Illustrator, transformed into vectors and placed directly into the engineered cut of the dress/top for Kira. I made adjustments between the lines, so the prints will smoothly connect on the sides.

Total approximate amount of designer's working hours is half an hour. Programs used for design work – Adobe Photoshop, Illustrator.



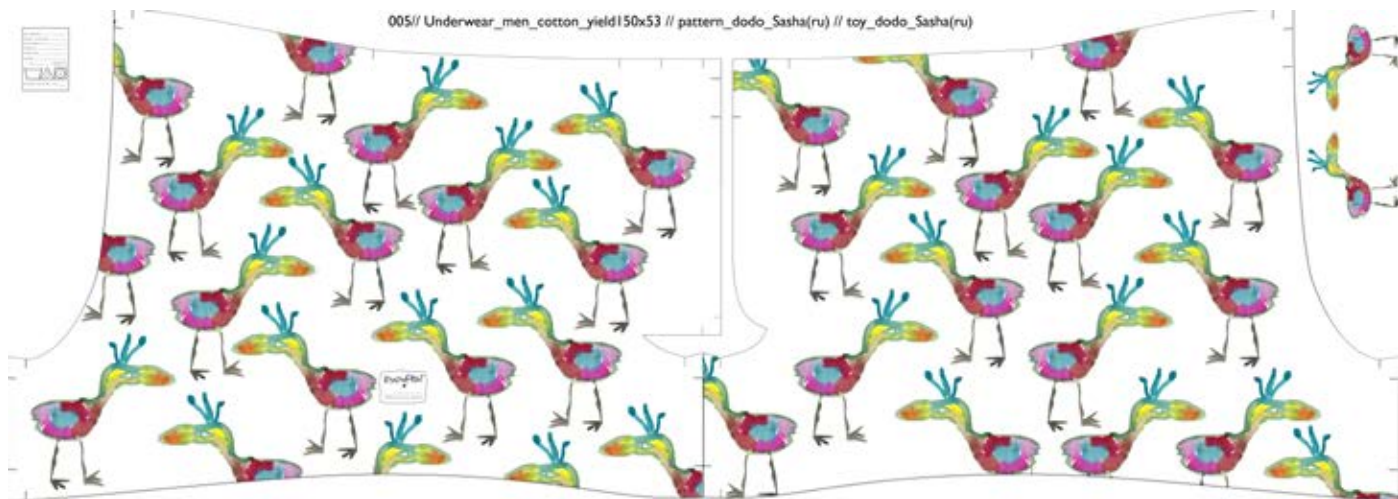
i24. Original drawing sent by mother (on the top), final placement print on the zero waste pattern cut of the skirt/top/dress for the author (on the bottom).



## DO-DO BY SASHA

This scan of an original drawing by Sasha was chosen to make an imitation of a repeated pattern. The original drawing was cleaned from its background and irregularly repeated right on the engineered cut of men's underwear in the Adobe Illustrator file. (See picture) Even though this drawing could be made into a repeated seamless pattern, like for instance the already presented repeated pattern of foxes by Sofia N., it was used for testing of a different technique: the imitation of a repeated pattern in a form of placement print. It was done to compare the results. And the total length of design work in hours.

The size of the final placement print imitating a repeated pattern equals the size of cut of the men's underwear 150 x 50cm, resolution 150ppi, total approximate amount of designer's working hours is one. Programs used for design work – Adobe Photoshop, Illustrator.



**i125.** Original drawing sent by mother (on the top), edited drawing by designer (on the right), final placement print on the pattern cut of the men's underwear + toy (on the bottom).

### PARROTS BY SASHA #1 AND #2

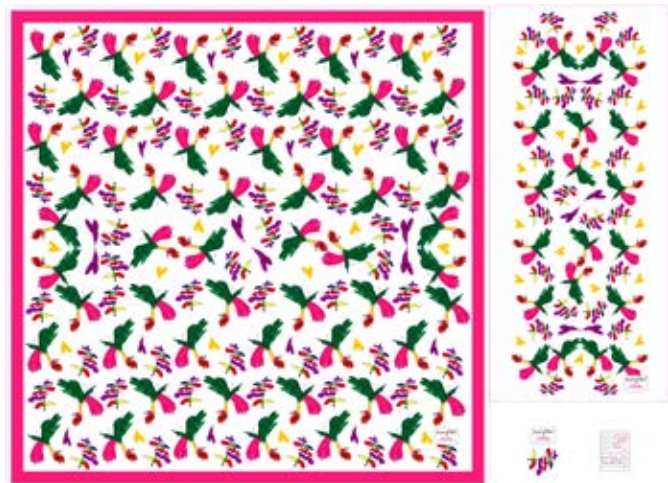
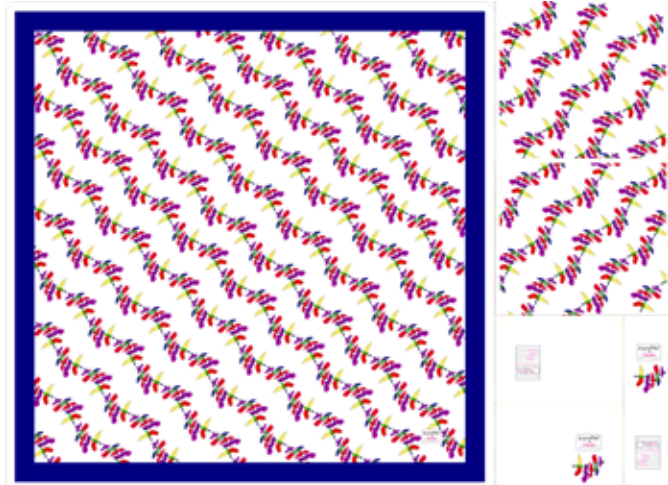
The following prints were created from the same author's artworks as previous bird motif patterns. The bird units were taken from different original drawings. The bird units were separated from the rest of the drawings in order to create prints that imitate repeated patterns. The imitation was done in order to save the working time of a designer. The further design work and decisions on placement of the units were done in Adobe Illustrator right on the engineered cut of the scarfs' set and the set with a scarf and child's skirt.

The size of the final placement prints imitating repeated pattern are equaled to the size of cut of the scarfs 100 x 100cm, resolution 150ppi, total approximate amount of designer's working hours is one for each engineered print. Programs used for design work – Adobe Photoshop, Illustrator.



**i126.** Original drawings sent by mother (two on the top), details cut and edited by designer (bottom).





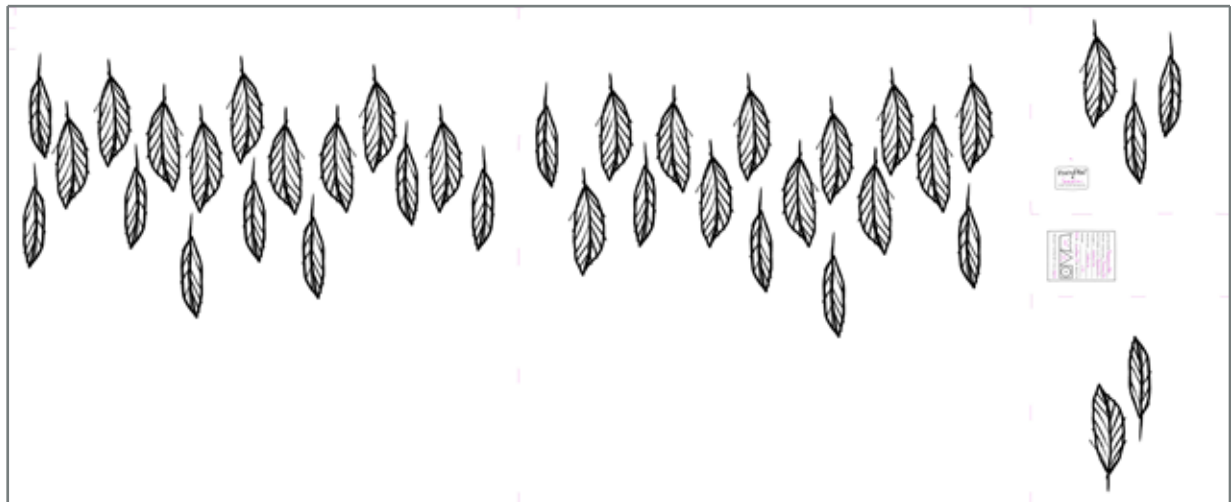
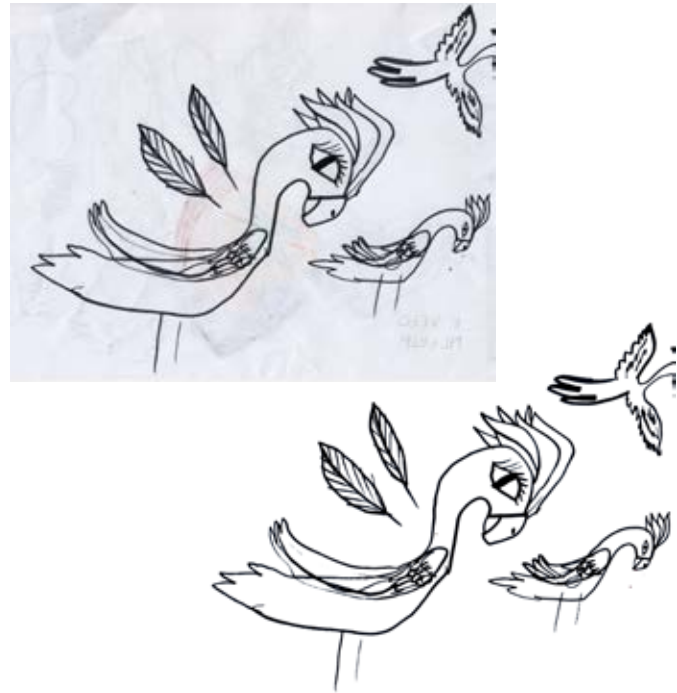
ii27. Final placement prints on the zero waste pattern cuts:  
 left - adult skirt, top right - scarf+child skirt+care bag,  
 bottom right - scarf+child scarf+care bag.

## FEATHER BY SASHA

This placement print was created from the same author's artworks as the previous bird motif patterns. The feather units were taken from the scan of an original drawing sent by Sasha's mother with all others of the "no directions", first upload. The feather units were separated from the background, and the rest of the drawing, in order to create a placement print directly on the digital cut of the dress for Sasha. Although this motif would make a professional looking repeated pattern, I tested it for a placement print. This placement print isn't imitating a repeated pattern, instead it is placed repeatedly on the top part of the dress and same elements are printed on the pockets details.

Total approximate amount of designer's working hours is half an hour. Programs used for design work – Adobe Photoshop, Illustrator.

**i128.** Original drawings sent by mother (on the top), drawing edited by designer (under), final placement print on the zero waste pattern cut of a child dress/skirt (on the bottom).

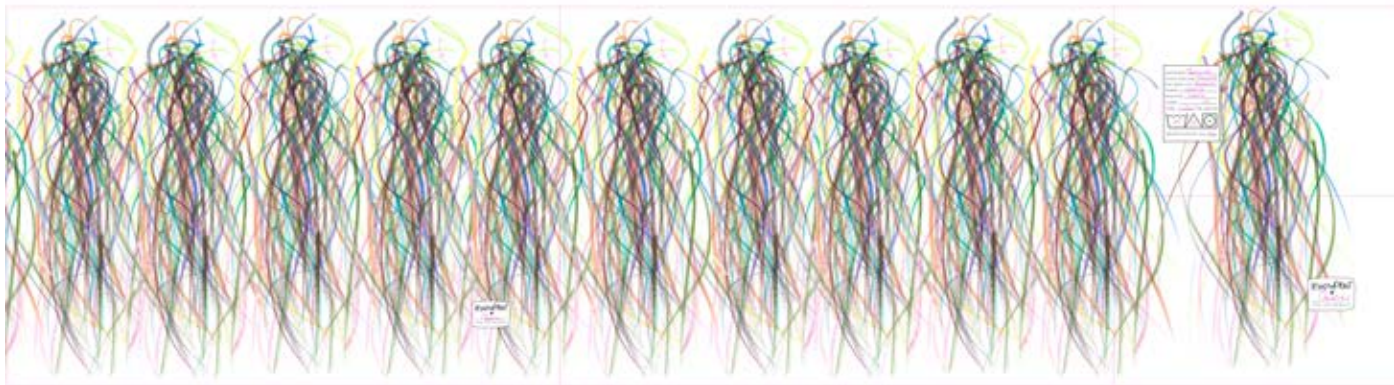
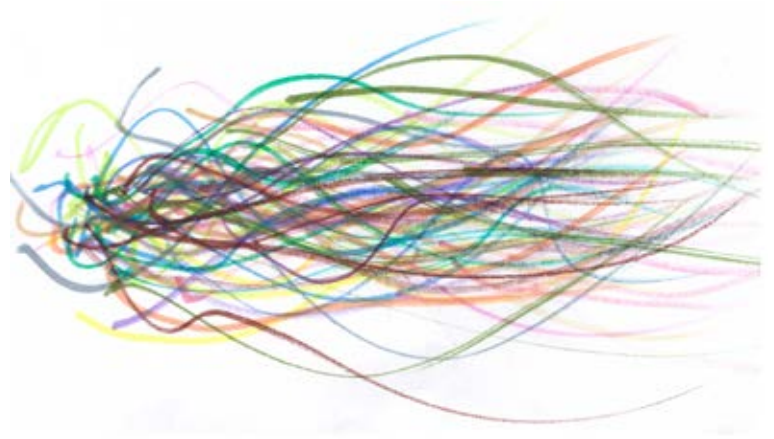


## ***RAINBOW BY MASHA***

Masha is Lia's sister, lives in Montreal, Canada, and drew this rainbow picture at the age of five.

The scan sent by Masha's mother was of an exceptionally good quality, therefore not much cleaning work was needed from the designer. This drawing was used for Masha's skirt' print that definitely imitates a repeated pattern. The placement print was created right on the engineered cut of that skirt in the Adobe Illustrator file.

Total approximate amount of designer's working hours is half an hour. Programs used for design work – Adobe Photoshop, Illustrator.



**i129.** Original drawings sent by mother (on the top), drawing edited by designer (under), final placement print on the zero waste pattern cut of a child skirt (on the bottom).

In general, it takes longer to create a professional and commercial repeated pattern than to make an engineered print that fits the grid of a digitized pattern cut. However, in the long run, the repeated patterns are easy to reuse for multiple garments of different types. Moreover, it can be further used for other objects, such as home interior textiles. Such use of the same pattern won't require additional pattern work by the designer, he/she would need only automatically repeat the already created pattern over the new object or garment pattern cut grid. Whereas in the case of placement print, it takes less time to create this for one garment, but it will take almost the same amount of time for every additional garment or object.

To conclude, the discussed methods, automated repeated pattern, manual repeated pattern and placement print – all might be a solution for the print development of this project. However, automated algorithms are not yet advanced enough to create interesting and/or commercial patterns. The two other methods both work for the goals of fashion garments' co-creation. For the purpose of making one co-created garment with one child's drawing, the placement print is more cost effective, due to the fact that it requires less working hours by a textile designer to create one file ready for printing. However, which of the two methods suits best and is more cost-effective in the long run is hard to tell at this point. To do so, deeper research on this subject should be conducted and, most importantly, the answer will depend on demand from the consumers. If consumer wants to have multiple objects and garments with one print, then a repeated pattern is the better solution. But for a single order of one print, the placement print is more suitable solution. Keeping in mind, that the Ready-to-paint project is conducted as an applied research, using a variety of

methods was key and the goal was to create fashionable, interesting and professional looking co-created prints for children's and adult apparel.

## **2.8 LABELS**

The subject of care and clothing labels became a matter of design and communication with the consumer in the Ready-to-paint project. The informative content and the application of the labels were redefined. The Ready-to-paint set of labels consists of two labels that are digitally printed simultaneously, with a cut and co-created print pattern. First is the information label that includes the care label with care instructions.

By definition, the care label means "a permanent label or tag, containing regular care information and instructions, that is attached or affixed in such a manner that it will not become separated from the product and will remain legible during the useful life of the product." (Federal Trade Commission, 2000.) The information label with the included care label and the clothing label was designed and digitally printed simultaneously with the engineered cut and print patterns on the same fabric. In fact, it is printed on one of the inner pattern pieces of the garment. Most often, it is printed on one of the pocket (see image 130 and 132) or it is placed on the back facing (see image 131).

These information labels meet the requirements of Care Labeling of Textile Wearing Apparel and Certain Piece Goods Regulations, which emphasize that care labels must be "seen or easily found when the product is offered for sale to consumers". In addition, care labels must state at least one regular care that is needed for the product. (Federal Trade Commission, 2000.)





Labeling systems vary from continent to continent and sometimes from country to country, even though the labels share commonality between systems. I chose European care label system that is based on the GINETEX Care labeling system, which I found closest to all the other systems, moreover it is clear and convenient to use (Intertek, 2016).

The care label on the Ready-to-paint garment gives recommendations on washing process, bleaching and drying. None of the participants reported that he/she was missing any information on the care and information labels—although the label can be improved in the future to contain more care instructions.

Fletcher and Grose emphasize that “washing and drying clothes creates considerably more impact than growing fibre, processing yarn and garment cut and sew”. Therefore, designer’s ability to influence on the user’s washing and drying habits and its impact should be taken seriously. A small change in temperature suggested for washing (the lower the temperature at which clothes are washed, the less energy is consumed) could have a bigger effect in the long term of use phase of the garment. (2012: 60.)

This recommendation is taken into consideration for the labels of Ready-to-paint garments. In fact, the label for cotton and silk sa- teen cotton blend recommends to wash garments on temperature not more than 30 degrees Celsius, do not bleach and tumble dry on lower temperatures. This care instruction is also intended to prevent the digital print from fading. (See picture 133).

However, this is only one level of communicating better environmental practices through labels on the garments.





As mentioned at the beginning, the Ready-to-paint set of labels consists of two labels that are digitally printed in the inner pattern cut details. First, there is information label that includes care label discussed above. The upper part of the same label consists of information on the parties that took part in making the garment.

In fact, the UK-based non-profit organization called Fashion Revolution started a social movement all over the world that is promoting transparency, traceability and responsibility throughout the fashion supply chain by encouraging consumers to ask brands the simple question: “Who made my clothes?” Consumers are challenging brands through social media by asking this question using the hashtag #whomademyclothes (Fashionrevolution.org)


The organisation states, that transparency means the company knows and communicate to the public and wearer who makes clothes for the brand and under what conditions it has been made. The main point is that what the public cannot see cannot be improved; therefore, knowing is the first step towards better practices. Fashion Revolution emphasizes that consumers have to demand that kind of transparency from the industry and ask questions like “who made my clothes?” The organization believes this is how change will happen. (FashionRevolution.org)

Instead, of being challenged by the consumer, I suggest providing the user with all the information up front. Therefore, in the information label names all the significant parties who took part in creation of each garment, such as:

- author of the artwork that was used was the print pattern (a child’s name and country of origin or residence)
- print pattern designer, who created the final print pattern from the child’s artwork (name and location)

- pattern cut designer, who designed the fit and appearance of the garment (as was mentioned previously in zero waste production, these roles are combined)
- printing company that printed the fabric with engineered print (name and location)
- source of fabric
- sewer, who cut and assembled the garment (name and location)

Moreover, the composition of the fabric is indicated along with percentage of textile waste created during the production of that garment. See image below.

ARTWORK	<u>Sasha/RU</u>
PRINT DESIGN	<u>Vaevara/CA</u>
PATTERN CUT	<u>Vaevara/CA</u>
FABRIC	<u>Clotho/CA</u>
PRINTED	<u>Clotho/CA</u>
SEWN	<u>/CA</u>
100% <u>Cotton</u>	0% WASTE
	
READYTOPAINT.CA / <u>029</u>	

**i133.** Ready-to-paint label of a child dress #029 made in cotton. Sewer name is written by hand on the ready garment



i134. Label printed on the back facing of a child dress.

Although, the user hasn't asked this information, it is communicated to him. I see it as an act of activism. Perhaps, the user after reading this information would ask questions to other brands about their practices. Knowing is the first step, and such an informative label introduces the user to the existing problems of fashion industry. Even if the Ready-to-paint garments are not guilty of unsustainable practices, other brands might be.

In the same way, this information communicates the values of Ready-to-paint project, conveying appreciation of the efforts that were put into one particular garment, and its uniqueness, along with zero waste production practices. When the user is told that there was no waste produced during the making of his garment, there will probably be greater intention to save this garment from waste as well. Moreover, knowing the number of people and their names that took part in the production of this garment make it not just a garment, but a specific garment. In addition, every garment has its own production number that in the future could be tracked online to read



i135. Label printed on the skirt part of the same child dress.

about the story of the garment. And of course, emphasizing the contribution of the little artist once again restates the co-creative nature of the project and the brand.

Likewise, the second kind of label existing on each garment is the brand name (name of the project) along with the co-author (child) name. Usually, this label is printed twice: on the inner side and, most importantly, on the outer side of the garment that can be seen by everyone. It is done for purpose of communicating the idea, that this garment is not the outcome of the brand design activity, but of the co-creation process with a artistic contribution of a particular person. Research participants reported that they liked the existence of such a label and it brought a sense of pride to the experience of owning the clothes.

In fact, the brand name written on the label was co-created with a child as well: my son Luka wrote the Ready-to-paint phrase at the age of eight and his writing was used to develop the label further.

Technically, all the labels went through a series of tests and design changes. At first, only the permanent elements were part of the initial design file and got printed onto the fabric. Names, locations and additional information that changes from garment to garment were planned to be filled in with a textile pen. This was so every party could fill out the space with their own information: the designer writes his/her name; the sewer his/her name, etc. However, tests showed that textile pen fades after every washing cycle. Moreover, the coordination of signing process by every party might be challenging. Therefore, it was decided to fill out all the known information during the design stage. This way, the labels are filled with information digitally in hand-writing using different colour, so it imitates the initial idea, but in a manner that can sustain repeat washings. The only maker who needs to sign the garment manually is the sewer, due to the fact that there will be cases when this information will be unknown prior to printing the garment. See image 133.

In summary, labels in Ready-to-paint project are designed to inform, inspire, educate and encourage the questioning of other brands about social and environmental issues. Labels are seen as a channel to communicate the values of the project, the main idea and the significant participants for each garment. Moreover, changing consumers' habits on washing, drying, and caring for their garments has ability to decrease the environmental impact of any item of clothing (Fletcher & Grose, 2012: 92). Furthermore, the individual number of each garment may help in further development of online archive for all the garments created by the project. Using this archive, the user can learn and share the stories of particular garment; and in the future, such archive could give an access to the history of the garment for next generations.



**i136.** Designer, pattern cutter, sewer of the project with ready scarves and the poster supporting Fashion Revolution movement. Photo was taken in the forest right behind the studio where garments were made.







## CHAPTER 3

# TOGETHER

This final chapter of the thesis will present final results of the co-creation and production processes—the produced zero waste co-created garments and objects. Then it discusses the received feedback from participants, the user of the garments, and shows the photos of the garments and its users taken during the testing period. Finally, in this chapter, I briefly describe the suggestions for future development of the work this thesis has started. To conclude, at the end of this chapter the evaluation of the whole work and personal reflection is presented.

# I OUTCOME

The following subchapter will present the outcome of the production part of the thesis: the garments and objects developed, and their use by people and with their co-authors and owners. Every garment was created with unique number printed on the label. I will use this numbers to show the ready zero waste co-created garments, then I will present the stories of the garments in the series of photos I called "A Family Album of Clothes" and share some of their stories in the captions under the photos. But first, I present the final prints that were printed on the final garments at real size.

## 1.1 FINAL CO-CREATED PRINTS

In the following pages some of the final prints and patterns are presented in its actual size. The difference between printing on paper and on textile should be taken into consideration.

p.163: **i137**. Water abstract. Placement print from Sophie's M. Abstract artwork.

pp.164, 165: **i138**. Summer flowers. Repeated patterns from Sophie's M. Flower artwork.

pp.166-167: **i139**. Summer night. Repeated pattern from Lia's K. Halloween artwork. Night snow. Repeated pattern from Sofia's S. Snow artwork

p.168: **i140**. Bird feather. Placement print from Sasha's S. artwork.

p.169: **i141**. Night Snow. Repeated pattern from Sofia's S. Snow artwork.

pp.170-171: **i142**. Rainbow. Placement print from Masha's K. artwork.

pp.172-173: **i143**. Foxes. Repeated pattern from Sofia's N. artwork.

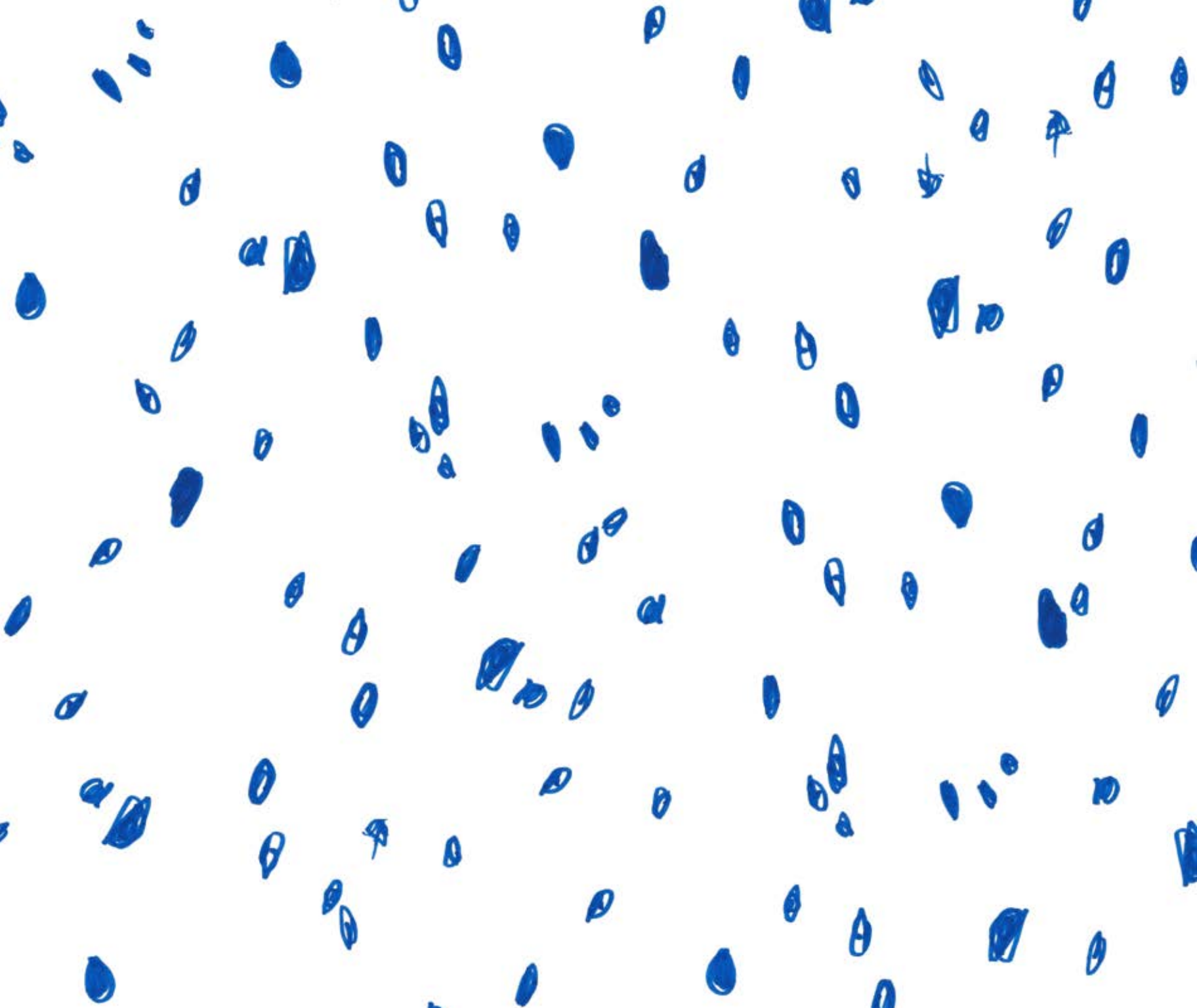
pp.174-175. **i144**. Black hearts. Repeated pattern from Sofia's N. Heart artwork.

pp.176-177. **i145**. Boobs. Repeated pattern from Liza's I. Boobs artwork.

pp.178-179. **i145'**. Parrots. Placement print from Sasha's S. artworks.











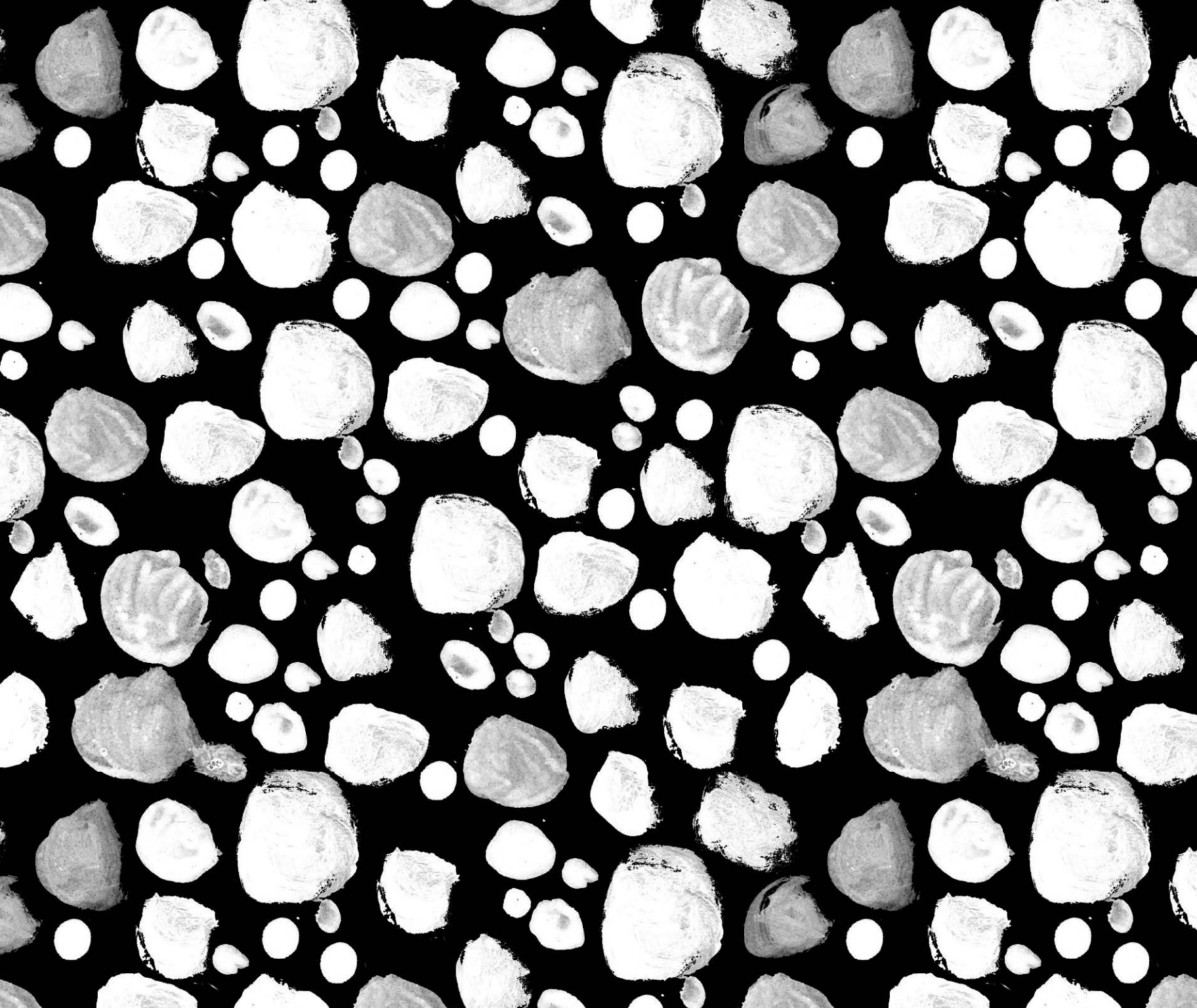












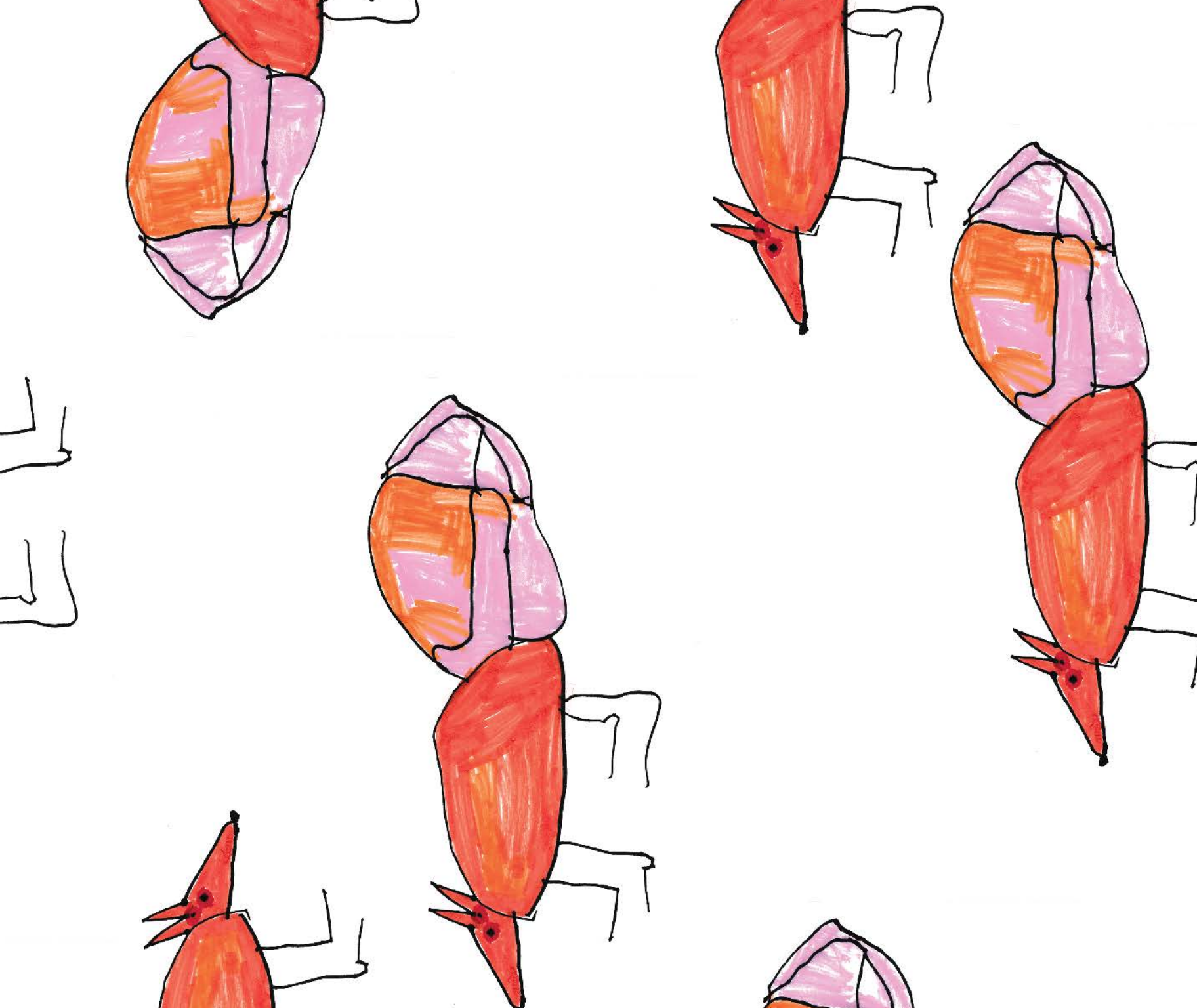


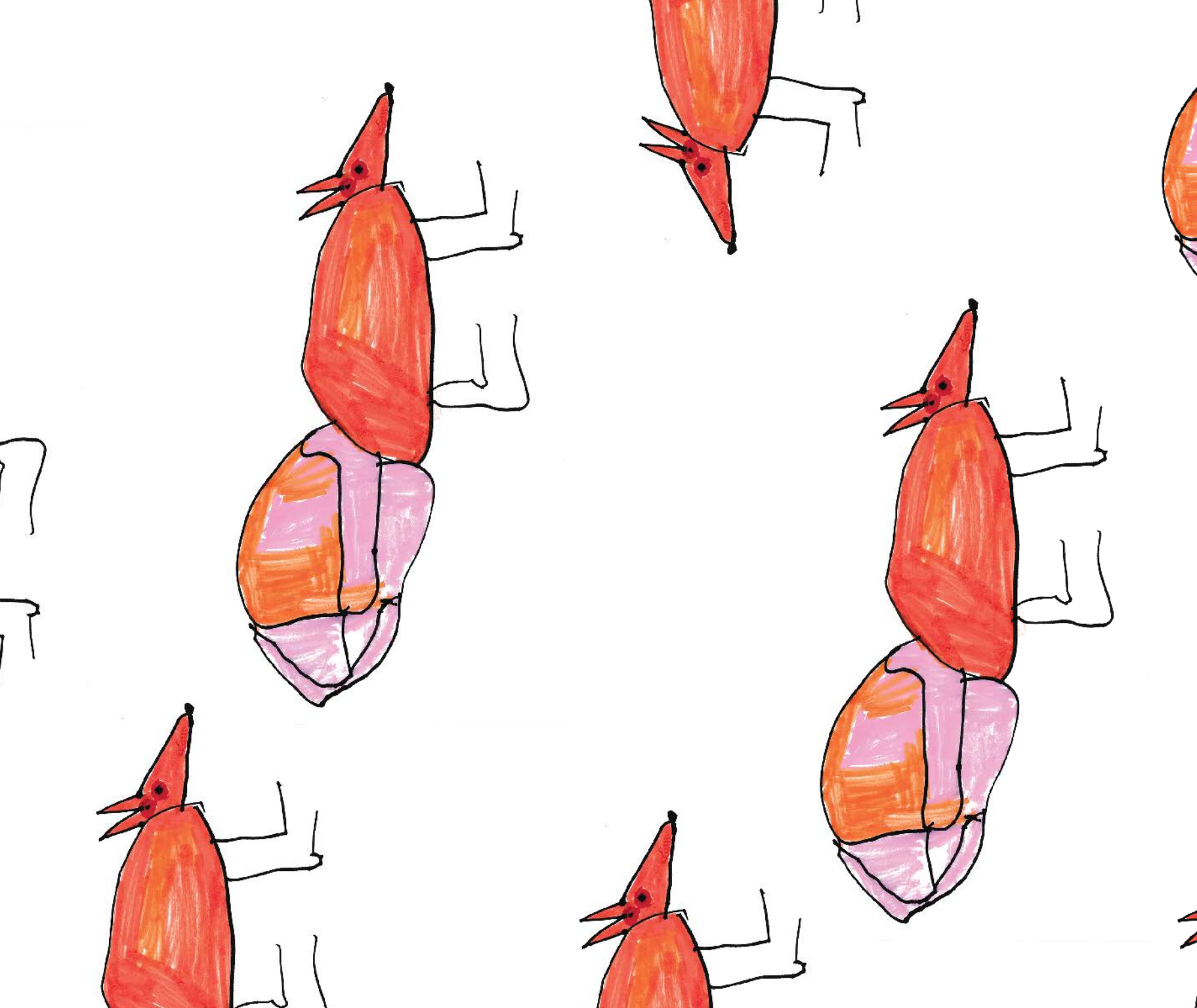








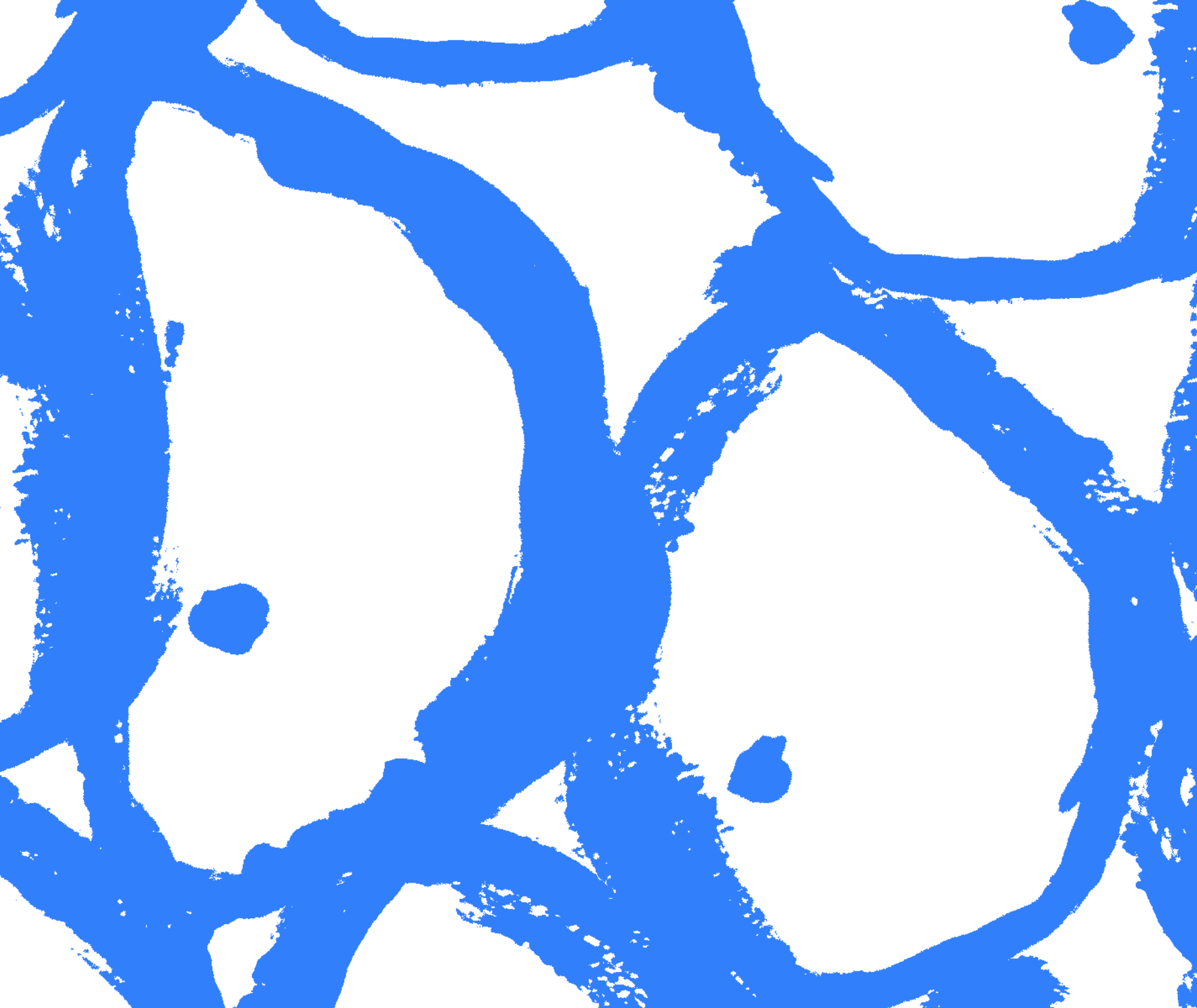


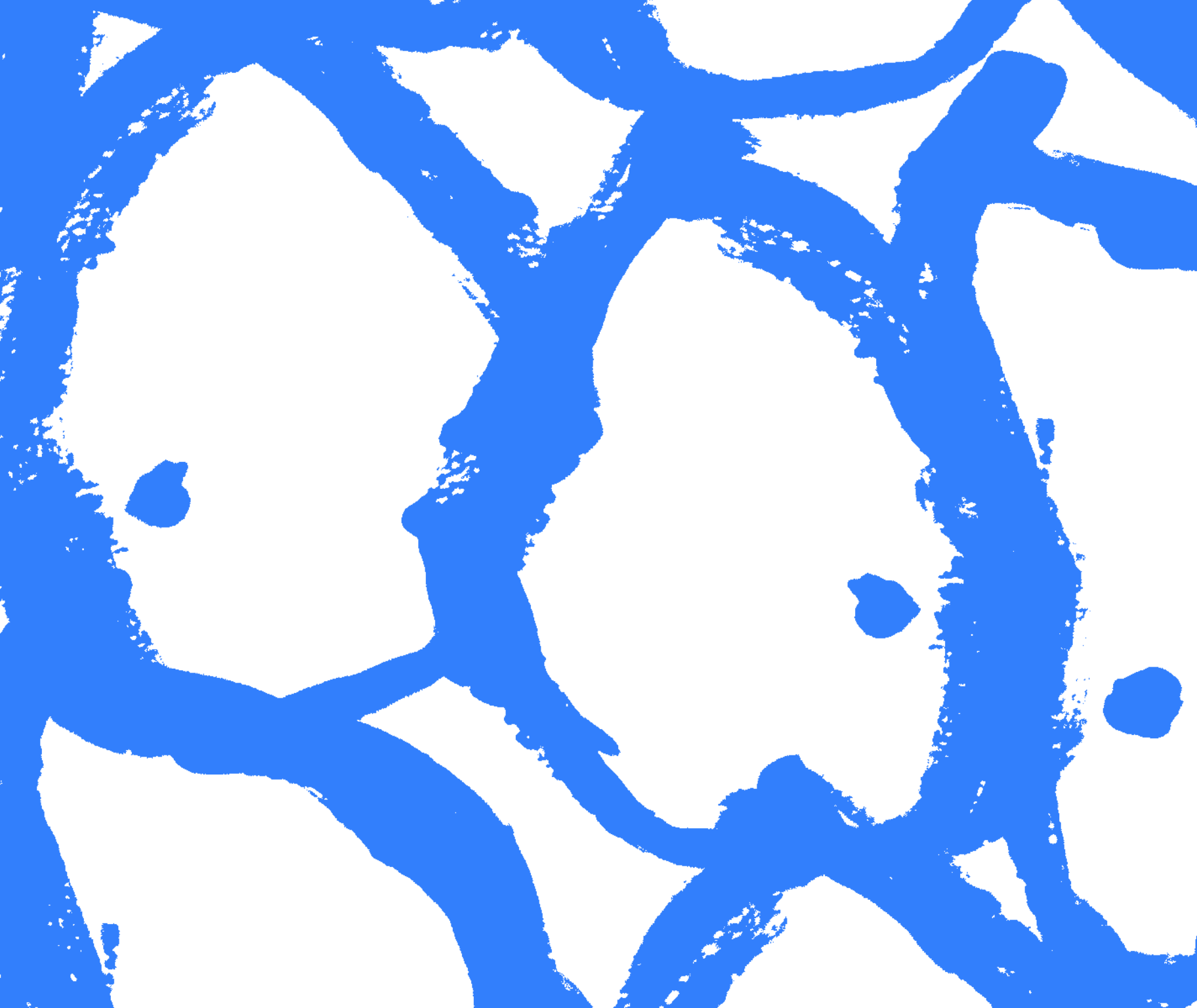


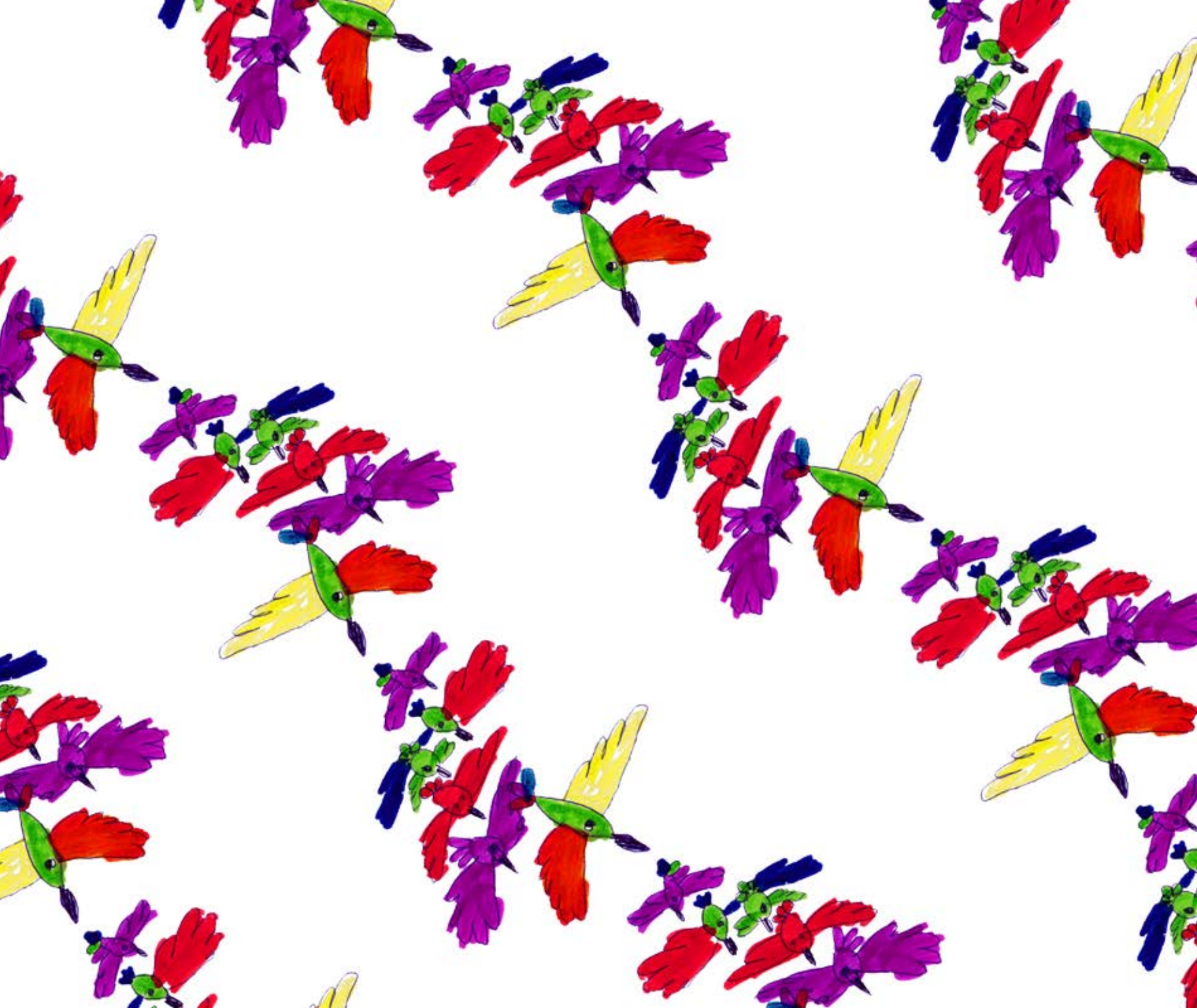


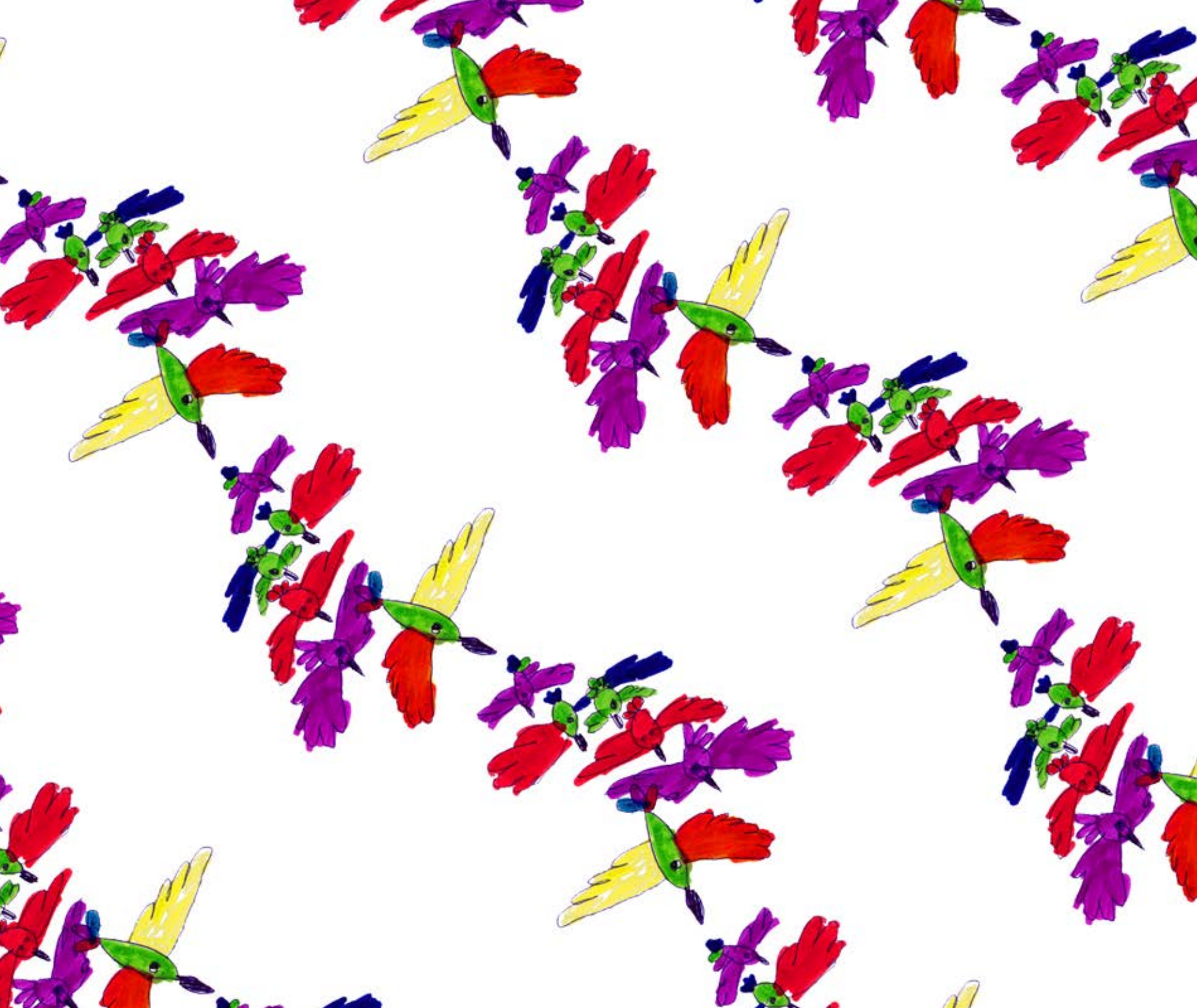














## 1.2 PRINTED SAMPLES

Further, two stages of production will be presented in photos: printed pattern cuts and ready garments, that were co-created with participants artworks and sent to their families to test.

Technical information is written in captions.

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**i146.** Garment #001. Father's underwear. Co-created with Sofia's N. Hearts artwork.

**i147.** Garment #003. Father's underwear. Co-created with Liza's I. Boobs artwork.

**i148.** Garment #002. Father's underwear. Co-created with Sasha's S. Parrots artworks.



i149. Printed pattern cut for garments 001, 002, 003 and toys. Printed on 100% cotton by American company Spoonflower.



## SCARF SET WITH CARE BAG

**i149-151** Set #009. Scarf + child skirt + care bag. Co-created with Sasha's S. Parrots artworks.

**i152-153.** Set #016. Scarf + child scarf + care bag. Co-created with Sofia's S. Snow artwork.



149



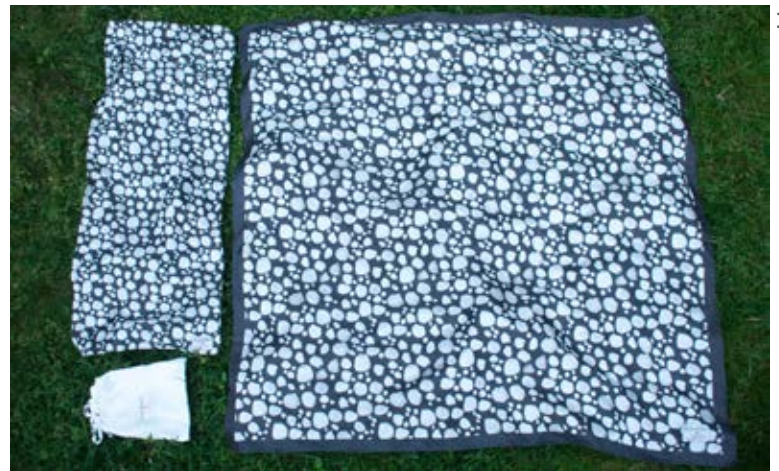
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151



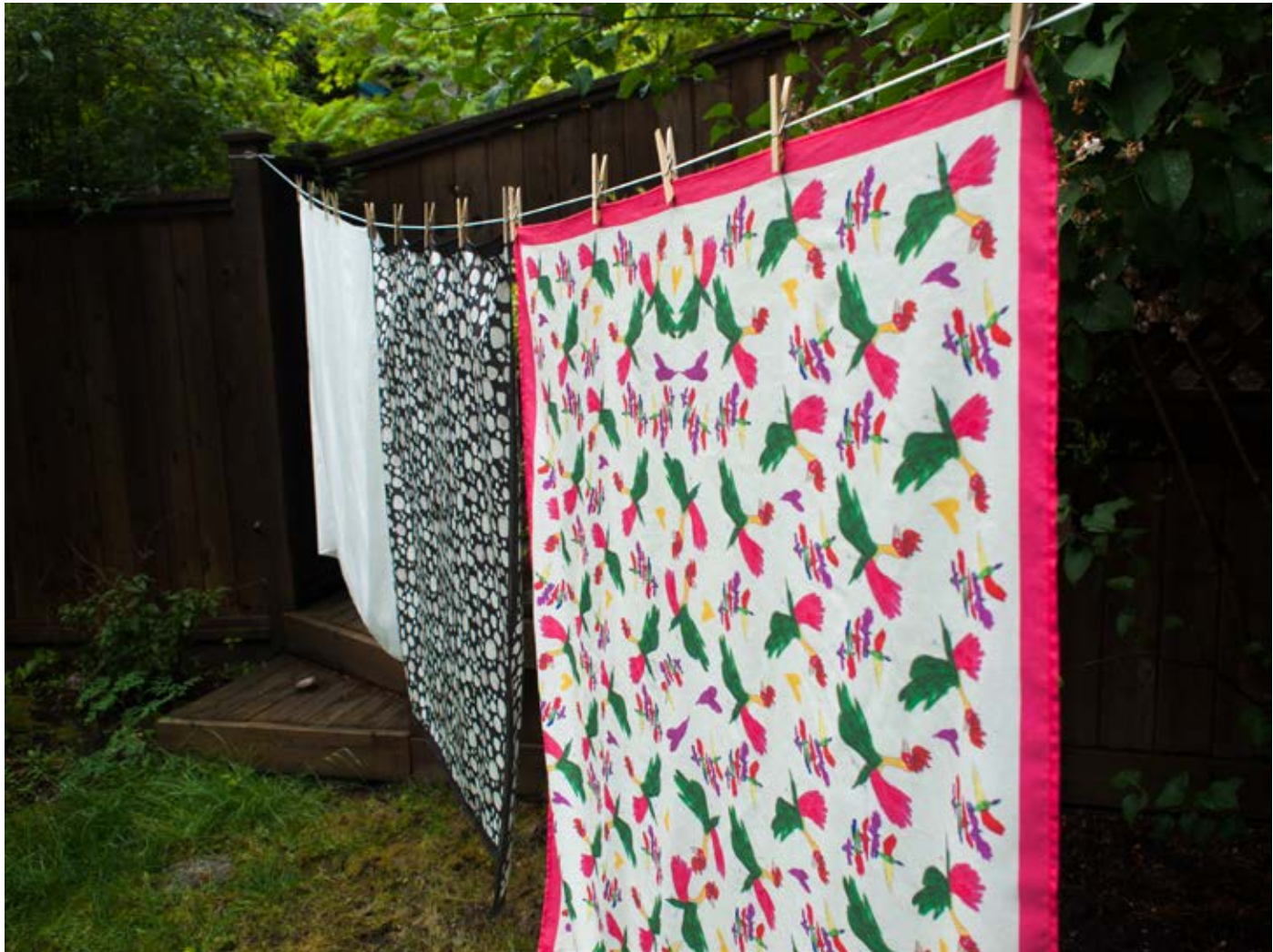
152



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i154. Scarfs from set #009 and #016. Printed with Vancouver based company Clotho.



## SCARF SET WITH CARE BAG

**i155.** Garment #014. Printed zero waste pattern cut. Scarf set: silk scarf + child scarf + care bag. Co-created with Sophie's M. Abstract artwork.

**i156-157.** Garment #014. Ready stage of scarf set: silk scarf + child scarf + care bag. Co-created with Sophie's M. Abstract artwork.



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**i158.** Garment #014. Ready stage of scarf set: silk scarf + child scarf + care bag. Co-created with Sophie's M. Abstract artwork.



## ADULT SKIRT



i159. Printed zero waste pattern cut for garment #011. Printed on silk sateen cotton by Vancouver based company Clotho.



**i160.** Ready garment #011. Adult skirt. Silk sateen cotton. Pattern co-created with Sofia's N. Heart artwork.



## ADULT DRESS

**i161.** Garment #033. Printed zero waste pattern cut on 100% cotton by Vancouver based company Clotho.

**i162.** Garment #033. Ready garment inner side with labels printed on the pocket details. Co-created with Sofia's N. Heart artwork.

**i163.** Garment #033. Ready garment back side.



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i164. Garment #033. Ready garment front side. Co-created with Sofia's N. Heart artwork.



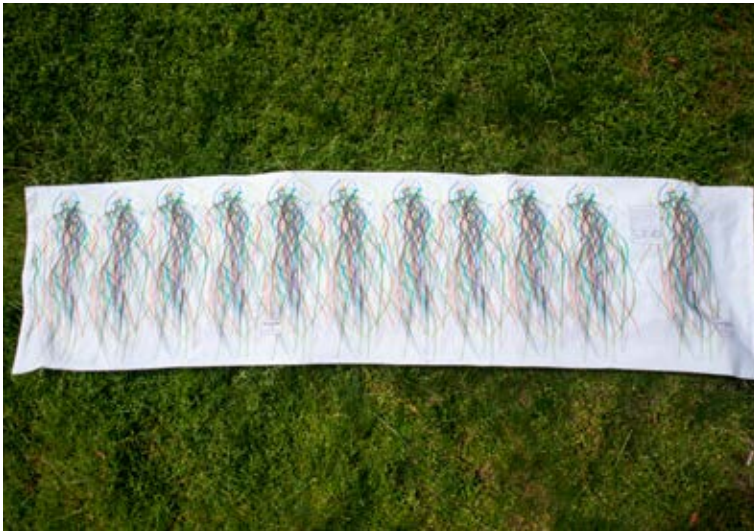
## CHILD SKIRT

**i165-166.** Garment #025. Child skirt co-created with Masha's K. Rainbow artwork. Zero waste pattern cut stage and ready garment front side. 100%cotton printed with Vancouver based company Clotho.

**i167-169.** Garment #032. Child skirt co-created with Sofia's N. Heart artwork. Zero waste pattern cut stage, ready garment front side, ready garment inner side. 100%cotton printed with Vancouver based company Clotho.



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**i170-171.** Garment #018. Child skirt co-created with Sofia's S. Snow artwork. Ready garment front side, ready garment inner side. 100% cotton printed with Vancouver based company Clotho.

**i172-174.** Garment #031. Child skirt co-created with Liza's I. Boobs artwork. Zero waste pattern cut stage, ready garment front side, ready garment inner side. 100% cotton printed with Vancouver based company Clotho.



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## ADULT SKIRT



i175. Printed zero waste pattern cut for garment #013. Printed on silk sateen cotton by Vancouver based company Clotho.



i176. Ready garment #013. Adult skirt. Silk sateen cotton. Pattern co-created with Sasha's S. Parrots' artworks.



## SCARF SET WITH CARE BAG

**i77-178.** Garment #023. Child skirt co-created with Sofia's N. Fox artwork. Ready garment front side and inner side with labels printed in pocket details. Silk sateen cotton printed with Vancouver based company Clotho.



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**ii79-180.** Garment #024. Child skirt co-created with Kira's S. artwork. Ready garment front side and inner side with labels printed in pocket details. Silk sateen cotton printed with Vancouver based company Clotho.



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## ADULT DRESS

**i182.** Garment #020. Adult dress co-created with Liza's I. Boobs artwork. Ready garment front side.  
Silk sateen cotton printed with Vancouver based company Clotho.

**i183.** Garment #020. Neck detail. Lable printed in the back facing detail.



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**i184.** Garment #021. Adult dress co-created with Sophie's M. artwork. Ready garment front side.  
Silk sateen cotton printed with Vancouver based company Clotho.

## *CHILD DRESS*



**i185, i186.** Garment #017. Child dress co-created with Sophie's M. Abstract artwork. Ready garment front side and back side.  
Silk sateen cotton printed with Vancouver based company Clotho.





**i187, i188.** Garment #019. Child dress co-created with Liza's I. Boobs artwork. Ready garment front side and back side.  
Silk sateen cotton printed with Vancouver based company Clotho.



## CHILD DRESS

**i189.** Printed zero waste pattern cut for garment #010. Printed on silk sateen cotton by Vancouver based company Clotho.

**i190.** Garment #010. Child dress co-created with Lia's K. artwork. Ready garment back side.

**i191.** Garment #010. Inner side. Labels printed in back facing detail.

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i192. Basic white garment and garment #010 co-created with Lia's K. artwork. Front side.



## ADULT DRESS

**i193.** Printed zero waste pattern cut for garment #022. Printed on silk sateen cotton by Vancouver based company Clotho.

**i194.** Garment #022. Adult dress co-created with Lia's K. artwork. Ready garment inner side, front.

**i195.** Garment #022. Adult dress co-created with Lia's K. artwork. Ready garment inner side, back.

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i196. Garment #022. Adult dress co-created with Lia's K. artwork. Ready garment front side.



## CHILD DRESS



**i197.** Garment #030. Child dress co-created with Sophie's M. Flowers artwork. 100% cotton printed by Vancouver based company Clotho.



**i198.** Garment #029. Child dress co-created with Sasha's S. Birds artwork. 100% cotton printed by Vancouver based company Clotho.



### 1.3 OTHER PRODUCTS

During the project two items of sweatshirts were created and produced through customized platform. Additionally, toys were created based on drawing by the same children and filled with the textile leftovers from the prototyping process of this thesis. Additional men's underwear were printed and sewn for presentation purposes.



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**i199.** Printed zero waste pattern cut for garment #005. Printed on 100% cotton by Vancouver based company Clotho.

**i200.** Printed zero waste pattern cut for garment #004. Printed on 100% cotton by Vancouver based company Clotho.

**i201.** Garment #005 and #004. Men's underwear. Front side.





**i202.** Sweatshirt designed through Printalloverme platform, produced by Printalloverme. Underwear - Garment #001 with toy that collected textile waste from the production of the underwear.



## Toys

**i203.** Toy co-created with Sophie's M. drawing filled with textile waste from the production of prototypes.

**i204.** Toy co-created with Sofia's N. drawing filled with textile waste from the production of prototypes

**i205.** Toys co-created with Sasha's S. drawing filled with textile waste from the production of prototypes



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**i206.** Toys co-created with children drawings filled with textile waste from the production of prototypes. Printed on 100% cotton by American company Spoonflower.



## ***1.4 FAMILY ALBUM OF CLOTHES***

This subchapter will present only part of many photos of garments' life with people who wore and own them. These photos were taken since garments were made (born) till it turned half a year. These are the memories of a garment saved in photos.

Authors of the following photographs are referenced by pages in the picture list in the end of this book.

































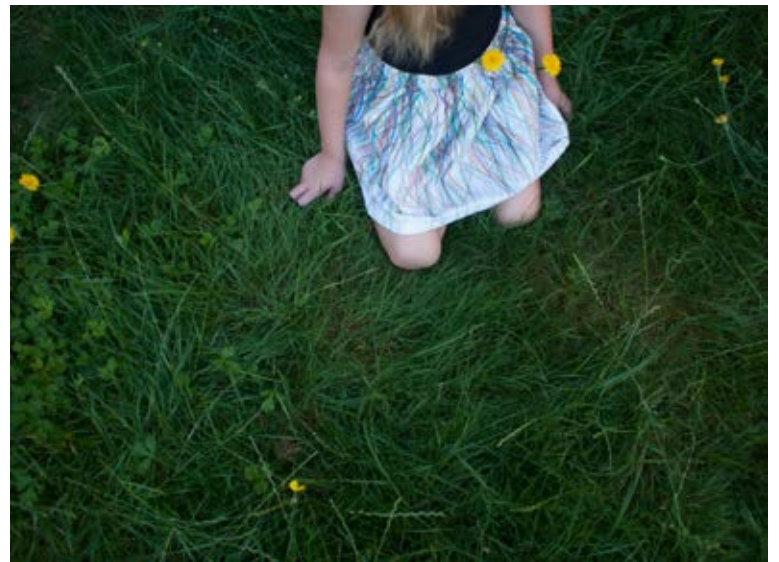


















































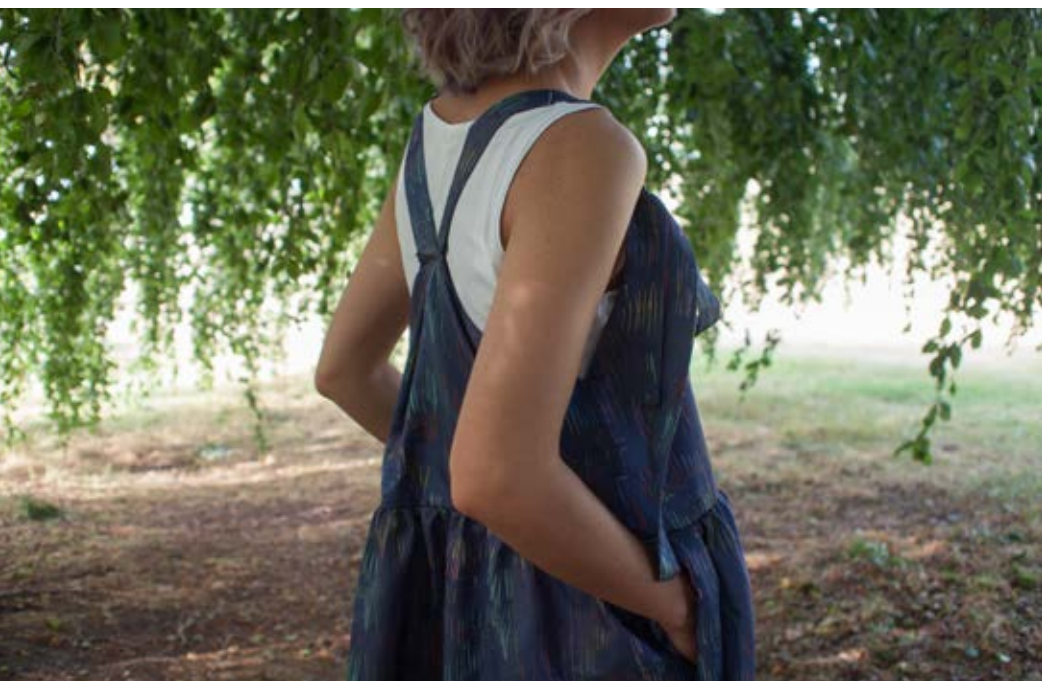








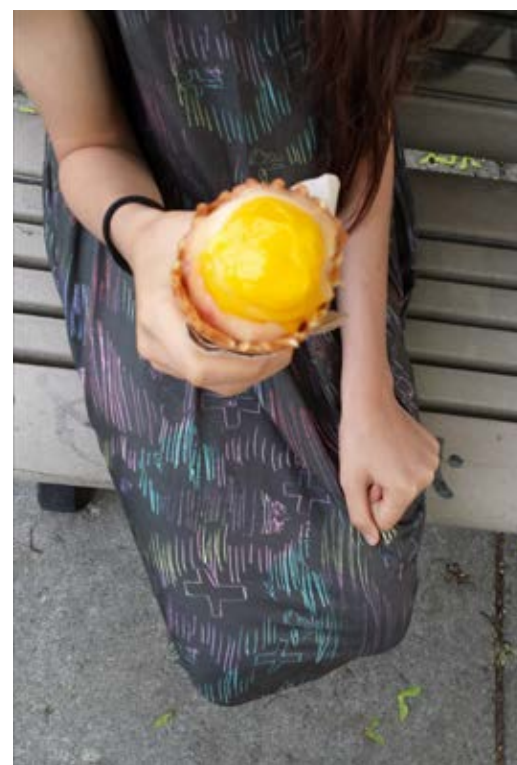












Memory: "It was hot summer, holidays, we went outside to show off the dress for the first time. Lia was eating a mango ice cream. Such a tender age, she was a bit shy, when the wind would blow up her dress, or when I would take pictures of her. But she was smiling."

(shared summer memory by Lia's mother, Klimenko A. Interview 27 December 2016)



Memory: “I remember that day, when we went with Sofia to buy presents for her dad. I took her from school, it was the beginning of September, still warm. First, we went to eat to a café and sat outside, and we laughed a lot. Then she ordered herself cacao at the bar, and I took coffee, she was telling that she is beautiful and well dressed. She was very proud of herself that day. She also told, that everything she does, she does with love, and even this skirt is the proof for that. Another day, when she wore this skirt, and I put mine too and we were matchy – she was so proud! ( this is the only combination of matching garments we do have)”

(Sofia’s mother, Nikitina I. Interview 11 January 2017)

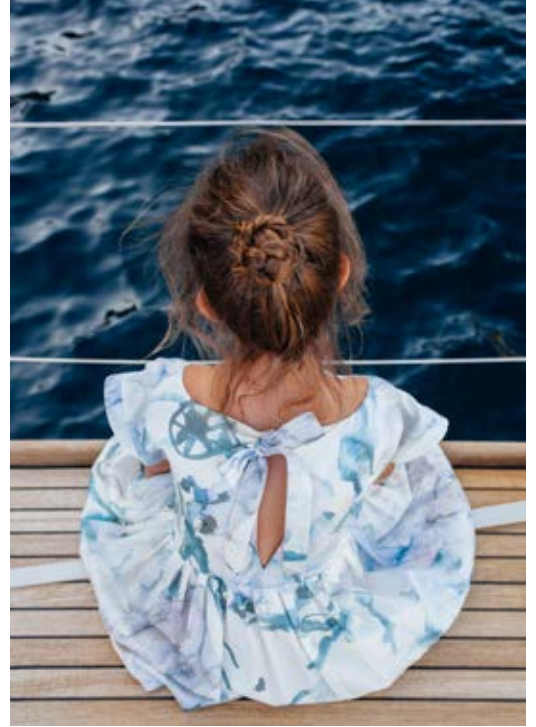








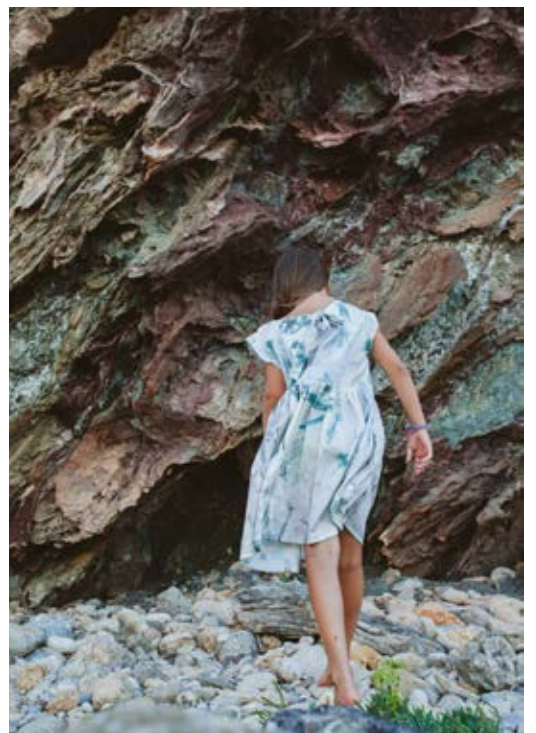
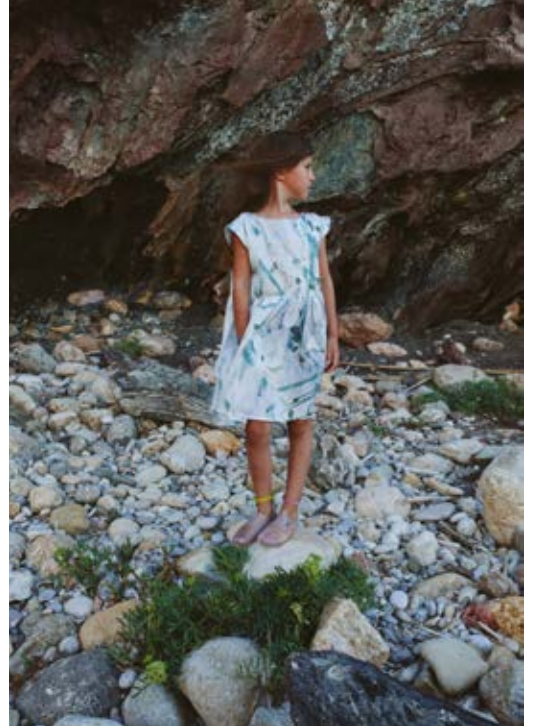














































## 2 FEEDBACK

The initial goal of sending the co-created garments to the research participants was testing these prototypes garments in real life and gaining feedback from the first users, the co-authors' families. The feedback was received through various streams: interviews and surveys after a six-month period of wearing the garments; personal chats via Facebook messenger and e-mail; on personal blogs and the social media accounts of the adult participants, where they shared their opinion with the public. The goal of getting feedback was to assess the quality of design and production work; the correctness of choices made in the textiles, colors, designs, pattern making process; and moreover, the relationship users had with the co-created garments, their first feelings and follow up emotions, and their notions about the project itself.

Only one family of participants did not provided feedback through the surveys and interview, explaining it as due to a lack of time, but the mother did share the short feedback through her social media account. See picture (include kovyrzina capture and photo) Therefore, when I will be further assessing the feedback and note "all participants", I mean all participants who replied to the conducted surveys and interviews.

All participants noted that they and their daughters felt joy and excitement when they received parcels with their clothes. Everyone replied that they, as well as their daughters, recognized their drawings in the pattern prints of the clothes and other objects. Only the mother of Lia, the oldest child-participant, remarked that Lia was in between of recognizing her drawing and being surprised by the transformation of her drawing; nevertheless, her mother reported high level of satisfaction of the design outcome.

Iuliia Nikitina, mother of co-author Sofia, from Amsterdam, shared her memories of their first encounter with the received garments: "Because we have received her clothing and mine in the same parcel, she was very excited that we can have matching clothing now." (Interview, 19 January 2017) When she assessed the child garment she wrote: "Sofia was excited, but also very curious HOW come her drawing appeared on a skirt, WHO made it, why is it skirt, why the hearts are black, if she can wear it right away. There was a lot of questions actually." (Interview, 11 January 2017).

Little artist Masha, from Montreal, also first expressed delight and then wondered if she really painted this, followed by curiosity associated with the technical side: "How Varvara redrew my drawing to the skirt?" (Albina Klimenko, 5 January 2017)

### 2.1 CHILDREN'S GARMENTS

Thoughts on children dresses and skirts received through the project:

I think it is marvellous dress, that will be passed to the younger sister. (Albina Klimenko)

The skirt is wonderful. It is pity that it will soon be too small for her, but my third child is a boy. (Albina Klimenko)

These are two favourite summer pieces of my daughter Sophie, we both think so. (Elisa Mirliton)

I hope she can wear it next summer too (Albina Itzhoki)

It is fantastic, this is the only opinion I have. It looks exactly the same as new, after all the washing. Sofia has been wearing it through the whole summer non-stop, with different top combination, and it is still her favourite piece. (Iuliia Nikitina)

I like it (Katya Stavitskaya)

Two girls, Liza from Princeton and Sophie from France, decided to wear their co-created dresses to their birthday parties, that in my opinion is an honour for a dress and a designer.

One cut of zero waste child's dress was reported to be too wide on top for this age group, even though the length is good, it was mentioned by all the participants who received this kind of cut of a dress.

"Honestly, we started to love these dresses long before we received it. The material of the dress (silk sateen cotton) turned out to be so tender, that now we regret that not all of our clothing made with it. The fabric (cotton) of another dress seems a little rough, but overall it does not really bother, but I would have thought about how to make a little softer (to the body) the upper part of that dress. The (silk sateen cotton) dress also has only one slight drawback: it is very wide, and Sophie is really thin girl. On the one hand, it is quite good, because it may fit two more summers and she can wear it, but last summer we had to use the brooch so it does not fall down from one side. I understand that zero waste approach imposes its own restrictions, but I would have thought about how to make a model of dress narrower. But again, this does not prevent us both to love these dresses with all our hearts." (Elisa Mirliton, 10 January 2017)

Similar feedback was shared by mother of Liza who received same cut of the dress co-created with her drawing:

"The material (silk sateen cotton) is the best! Very silky and soft. The dress has a big neck opening so it slides to one side all the time, though my daughter loves it, when one of her shoulders is open"(Albina Itskhoki, 10 January 2017)

Everyone reported that they think their daughters could wear these garments one to two more years.

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**Do you think your child feels proud when she wears clothes with her drawing? Explain please. Or what kind of emotions/feelings does she have or expresses when she wears it**

**Does she value this dress/skirt more than any others because she co-created it (or any other reasons)? How do you think its value change with time? Explain please**

**What would you do with this item when she is no longer using it for any reason? What would be the most likely cause for her to stop wearing it**

Yes, she was amazed and proud. In addition she feels some kind of delight that someone could turn her drawing into such pattern on the dress.

Of course, it is valuable. It is hard to tell in advance, but I think its value won't change, because Lia is quite sentimental.

It will be passed to her younger sister. Even though I suggest her to remake it into a skirt if she wants. She will decide

Yes, she even asked me how to explain on French that this dress "had grown out of her drawing"

I think, it's fun for her. She is in such stage now, when she is unconfident and criticize her art, therefore I think the value will grow with time.

She will soon grow out of the dress and then I don't know what to do, it is to valuable to give it away.

At first, of course, she proclaimed to her friend that this dress was made with her drawing. But when everyone became aware, she calmed down on this subject. Yet she knows that the work was done by someone else. I think this dress will always be different from the rest. With the second dress emotions were less strong, I think she simply ran out of battery after the first dress. I think yes, It is hard to access though. But I can see, that now

I think yes, It is hard to access though. But I can see, that now is the pick of her excitement, especially it was at the beginning, nowadays it fades a little bit, she became calmer in her reactions, but I think that the emotional value and attachment to these dresses will grow over time.

I personally hope that one day Sophie will have a daughter herself and these dresses will be passed to my granddaughter. Anyway, these dresses will be forever part our life and the current period of our lives together, the memory about it and the story , that you want to tell over and over.

When Sophie will outgrow her dresses (what other reason to stop wear it could be?), I will be carefully preserving it for my hypothetical granddaughters

Do you care that this dress/skirt was produced with no fabric waste? Do you think it affected its design, in what way?	Do you think that information written in the info label of that dress/skirt is important? Is it important for you to know where and who made clothes for your child? Do you miss any info there?	Does care instruction was easy to understand?	Is it ok for you that the brand label with your daughter's name is visible in this item?
It's great. It may affect the design, but I doubt that the effect is significant	Good that the label is nice-looking one. I appreciate it as a part of supporting you as a designer and author of the project.	Yes	I do like it. It supports the concept of personalized / customized clothing of a child
Same as top answer	Same as top answer	Yes	Same as top answer
<p>Yes, this is very important. At least because these dresses made me recognize and think for the first time about the problems of excessive amount of textile waste and about the sad state of the industry in whole. Well, in the end, they became an excellent occasion to have a conversation with Sonia on this topic.</p> <p>I assume that zero waste approach influenced the design in a way that there were not a lot of design choices for pattern cuts, but this is my assumptions. On the whole, I didn't expect that such a beauty can be made with no waste.</p> <p>Label is beautiful and great, it is informative and especially I like the fact that it is printed on the fabric (on the pattern piece). I hate those kind of disturbing garment labels, though I can't cut them out, because I'm afraid to forget washing instructions.</p>	Label is beautiful and great, it is informative and especially I like the fact that it is printed on the fabric (on the pattern piece). I hate those kind of disturbing garment labels, though I can't cut them out, because I'm afraid to forget washing instructions.	Yes ,	I'm loving it

**Do you think your child feels proud when she wears clothes with her drawing? Explain please. Or what kind of emotions/feelings does she have or expresses when she wears it**

**Does she value this dress/skirt more than any others because she co-created it (or any other reasons)? How do you think its value change with time? Explain please**

**What would you do with this item when she is no longer using it for any reason? What would be the most likely cause for her to stop wearing it**

Yes! She tells all her friends that this is a boob dress and that she drew them herself

Yes

Save it for her children

When we have just received it, she was talking a lot about her skirt. She has introduced it to classmates and to the teacher, explaining that this is mom's friend who created this for her. After some time she wears it mostly as a general wardrobe piece, but if anyone comments on the skirt "mooi rookje" (in Dutch) - she always comments that the drawing is created by her.

I think it's both - the model of the skirt, fabric, and also that specific moment she co-created the piece. Sofia has already stated that I should never give this piece to any other child when she grows up, and only if she has a sister later, she can have it. But at the same time Sofia is very picky with clothing that gives her comfort. For example, she doesn't wear too long skirts (not comfortable to bike) or dresses 3/4 sleeve. So in this case with our skirt - it gives her also a lot of comfort, so she enjoys wearing it regularly.

I think she will stop wearing it once she grows out of it and it becomes too short. I will definitely collect it with some other children clothing of my daughter which I keep as memory (but also in case we have more daughters in the future)

They express joy when they see it, but they don't tell much.

I think, it will become more valuable with time.

I save it for grandchildren

**Table 8.** Survey with questionnaire for research participants sent and filled through December, 2016.



**Do you care that this dress/skirt was produced with no fabric waste? Do you think it affected its design, in what way?**

**Do you think that information written in the info label of that dress/skirt is important? Is it important for you to know where and who made clothes for your child? Do you miss any info there?**

**Does care instruction was easy to understand?**

**Is it ok for you that the brand label with your daughter's name is visible in this item?**

Not really

Yes

Yes

Yes

I am putting some thought into it, yes. It makes me feel good that there was no waste in producing the piece, but I cannot say that this is the main reason I like it that much.

I am absolutely in love on how the label is made. Usually we have to cut off all the labels (Sofia hates them) but with this skirt we didn't even think about it. I find all the information sufficient and more than enough.

Yes

It is more than OK for me, moreover I feel proud and my child too - she showed it once to someone - that this piece is HERS.

I don't care

It doesn't really matter

Yes

I like it.

The participants were asked how often girls wear any kind of dresses and what kind do they like, and then how often they wear the Ready-to-paint garments. The answers varied. I noticed that it depends on how often child wears dresses overall, some prefer jeans, some didn't care about clothes; but for those, who wear dresses and skirts on a daily basis, the Ready-to-paint garments became their weekly summer dresses. See **table 10**.

When parents were asked to evaluate the physical qualities of the received garments by several factors, replies were:

<b>How do you like the print design?</b>	<b>Do you think the print fits the item?</b>	<b>How do you like the fabric itself?</b>	<b>How do you like the print quality?</b>	<b>How do you like the sewing quality?</b>	<b>How well does it fit your child?</b>
5	5	5	5	5	5
5	5	5	5	5	5
5	5	5	5	5	4
4	5	5	5	5	4
5	5	5	5	5	5
5	5	4	5	5	3

**Table 9.** Assessment of children's garments qualities.

It was noted several times that silk sateen cotton is silky and pleasant to touch and feels ideal fabric for the dress.

Even though one participant replied that the same fabric is too light for the skirt and she likes more the cotton option. The mother of Lia, Albina, reported that she feels that the silk sateen cotton is a bit light for this length of the dress. I assume that this is subjective

matter and depends on the preferences of the wearer. Other participants emphasized that the silk sateen cotton, "the material is the best! Very silky and soft." (Albina Itzhoki)

Sofia's skirt with hearts: "I find the print size absolutely perfect for this skirt. I wouldn't change even a single pixel. I think this specific print and also color inversion suits this exact model perfectly. It is just right; not too big, not too small. I like the model of the skirt and that the strap line is pretty soft; it doesn't feel tight or uncomfortable to wear for a child. The skirt is made just PERFECT, all the lines are straight, this is the quality of high-level and I am more than happy to have this piece in a wardrobe of my child. After all the washing the print is still the same color. It did not change, did not fade." (Nikitina Iuliia, 11 January 2017).

To sum up, the evaluation of children's garments showed that even if the fit of the garment is not perfect, the owners and its mothers still value the dress significantly and feel proud to be its co-creators. The feedback also shows, that the choice of fabric was, in most cases, the right one and satisfied owners and their mothers; the design choice of print pattern making were approved by everyone; the print and printing quality, as well as sewing quality, were ranked highest. The only concern is the fit of the garment, as mentioned before, one square cut of zero waste dress was commented as too wide for this age. Additionally, the dresses with straps were worn as skirts, because they were too small as dresses. Therefore, the mother assessed the fit with a three out of five. Even though this shows that this cut of the dress can be worn as a skirt when a child gets bigger. In conclusion, they all expressed high level of emotional attachment to these garments and strong desire to save it for the future children or grandchildren.

Does your child wear dresses/skirts? What kind of dresses/skirts? How often does she wear it? On what occasions? Explain please.	Does your child has a favorite dress/skirt? What kind? Could you describe it, please?	How often does your child wear the dress/skirt from Ready-to-paint? On what occasions?
She wears, but since she turned 10-11 she does it very rarely. If she chooses to wear dress than it most likely sport style	It is more – favourite jeans nowadays, but if she was about to choose her favourite dress, then it would be the one from ready-to-paint.	4 times may be during summer, but for her current state it is considered often
Wears often. Different dresses, more of a comfortable cotton style. Skirts - she prefers tutu kind.	Some awful kind of dress that reminds a cake, that was a present from her relatives. Unfortunately.	Not very often, but she chose to wear it for girlfriend birthday and for her class photo in school
Sophie likes dresses a lot and wears them always, except cold days in winter and sports days in school. She has either straight cut of dresses or similar to the ones from ready-to-paint.	Her preferences change with her mood.	Not in winter, it is too cold for it, and she doesn't have appropriate shoes for it. But when it was warm, she wore it regularly: to school, to Saturday gymnasium, to meet her friends, to the restaurant, during holidays or for any occasion to make it special (silk sateen cotton dress). Other dress (cotton flower dress) she wears when it is extremely hot for nature walks, because it is perfect for such occasions
She wears only dresses	This dress is her favorite	Every week during summer
My daughter wears mostly skirts and dresses, and pants during winter time. Skirts are her basic wardrobe pieces, dresses as well, - she finds it more comfy to wear than jeans or pants.	Except of the one from Ready to Paint, she has a one from Cottonon (Australia) with black stars. This was her first skirt she chose herself and she still likes to wear it now even if it is too short.	During the summer it was almost every day except of the laundry days (we also have another one favorite from RtP with another drawing). She choses all her clothing by herself now

**Table 10.** Survey with questionnaire for research participants sent and filled through December, 2016.



## 2.2 MOTHER'S GARMENTS

Similarly, to the assessment of children's garments, mothers were asked to assess their own garments, as it can be seen from the table, overall print design, printing quality, fabric and sewing quality were ranked high, while fit was a concern for many.

How do you like the print design created with the drawing of your child?	Do you think the print fits the item you've got?	How do you like the fabric itself?	How do you like the print quality?	How do you like the sewing quality?	How well does it fit you?	In your opinion, is the size correct for you?
5	5	5	5	5	2	No
5	5	4	5	5	3	Yes
5	5	5	5	5	5	Yes
5	5	5	5	5	3	It is hard to tell, I could tell that it is my size, but at the same time it is too wide for me.

**Table 11.** Assessment of mother's garments by research participants.

Participants were asked to explain their answers:

- "I do like a lot the color of my dress and lightness of the fabric. The cut of the dress not so much – it doesn't fit my type of figure and my height. But I understand that it is hard to design something that fits everyone."
- "I think that skirts with elastic bands do not fit me, it makes me look fatter than I am. I also would prefer if the fabric would be a bit more heavy-weight, however, the print looks very beautiful on the skirt."

- "The Skirt. I love this print, the same as I like it on my daughter's skirt. On my skirt, it is a bit different colour (lighter) and different fabric than hers, and this I find very nice, so I feel myself a bit more adult. I like the fabric, of course, and the pretty of it is that I can wear it both - very nicely ironed or not at all - the fabric doesn't get crumpled. I love how it is sewed - absolutely perfect, all the lines are perfect. It fits me amazing, truly (ahhh I will wear it today for sure)."

- “The dress. I am bit concerned about the fit of the dress, but I anyway wore it and enjoyed wearing it. I love the material - it is different from the skirt, and hearts are more contrast. The sewing quality is amazing - like every piece I have. It is very high-quality piece. I also like that I can adjust the straps - very convenient.”
- “Sweatshirt. It is just perfect, what else can I add. The size and fit is absolutely amazing. Fabric - too. The print - too.”
- “The fabric is absolutely genius, I don’t want to take this dress of at all. Print is exactly what I love and colors are absolutely mine. The only thing I would change is the size or the cut, because the dress turned out to be too wide for me and I’m not a big fun of belts (may be that would help otherwise).”

The dress that didn’t fit at all, and was considered too big and too wide is still in the family and its owner Albina shared her intention to remake it to a skirt or another dress, or she may leave it for her daughter to wear who will be much taller than her (Albina Klimenko, 5 January 2017).

Although the fit was a concern for many, all reported that these garments are very special for them and its value will grow over time. Everyone expressed the intention to keep these dresses for their daughters, but meanwhile continue to wear it themselves. Moreover, they mentioned that children recognize every time that it is their drawing on the garments, and feel joy and proud.



Participants were asked to share their opinion on labels and zero waste production:

<b>Do you care that this dress/skirt was produced with no fabric waste? Do you think it affected its design, in what way?</b>	<b>Do you think that information written in the info label of that dress/skirt is important? Is it important for you to know where and who made your clothes? Do you miss any info there?</b>	<b>Does care instruction was easy to understand?</b>	<b>Does it ok for you that the brand label with your daughter's name is visible in this item?</b>
Yes		Yes	It looks interesting and makes others wonder.
It is additional nice bonus, I don't know how it influenced the design.	I don't really care	Yes	I like it
I did not put that much thought in it, but when I think about this now - I find it very important. I think the design of the pieces is just amazing one, so I find it outstanding - how the designer created this universal shape using no fabric waste.	I read labels very rare, actually, most of the time to get information on how to wash the piece. So this information was very clear on the label and that was enough for me.	Yes	I like this a lot - I am actually very proud of it.
It is of course important for me, It gives a reason to discuss this subject with your child, and with other adults too. Many of us has never thought about it.	I like a lot, that all the information is printed right on the dress. All I need to know is there, and especially nice, tat the name of the artist is there too. Moreover, the information on who and where made this garment makes this piece live and unique.	Yes	Oh, I absolutely love it.

**Table 12.** Survey with questionnaire for female adult research participants sent and filled through December, 2016.

To sum up, as with the children's dresses and skirts, the zero waste square cut was a concern for some participants, but most of them found their ways to wear it because they liked the other qualities of the garment. Even when the fit wasn't right at all, the garment was saved and there is an intention to remodel it or save it for the child. Overall, every participant expressed a high

level of emotional attachment towards the co-created garments. Moreover, some started to think about the waste problem in the fashion industry and shared their concerns with their children.



## 2.3 FATHERS' UNDERWEAR

As mentioned previously, men's underwear was designed with classical tailored cut, and the fabric waste became filling for the toys of their children and other participants. Fathers were asked to assess the underwear they received with similar questions as mothers.

Has your daughter recognized her own drawing in the print of the underwear?	What was your first expression from the underwear?	How do you like the print design?	How do you like the colour choice?	How does the underwear fit?	How do you like the quality of the product overall?	Please, elaborate your choices and share your feedback on design, fit, quality. (what are your concerns or likes, what would you prefer to change, do you like the label and any other thoughts you would like to share)
Yes	Cool! I really liked it and was surprised how great my child's drawing was working as a pattern	5	5	3	4	The trousers' inside is a bit "hard", feels more like shorts than underwear, it almost suggests that you need to wear another underwear under it, the sews "bite" a bit, leave marks on the body.
Yes	Outstanding!	4	4	4	4	I did not think this was Liza's best pattern, but it is very amusing indeed and makes it for a great story. I gave 4s which really mean great! but not something that completely blew my mind on any of the dimensions above (Liza's dress was a total 5 though).
Yes	Perfect underwear. I wear it with pleasure also like swimming shirts to make everyone jealous.	5	5	5	5	Everything is great

**Table 13.** Survey with questionnaire for male research participants sent and filled through December, 2016.

Then their emotional attachment towards these items was assessed:

<b>Do you wear this underwear on the daily bases? How often do you wear it? On what occasions? Explain please</b>	<b>Do you value this underwear more than any others that you have because your child co-created it? How do you think its value change with time? Explain please</b>	<b>Would it be easy for you to throw this underwear away when you are no longer wearing it? or what would you do with it? Explain please</b>
I don't wear it every day, it feels more like a weekend pair, something to put on when you're chilling with your Sunday morning tea on the balcony. I also always take them with me to all of our holiday trips, it feels like a weekend/chilled/leisure time underwear	I definitely value it more than any other underwear I have - it has my child's drawings and it looks VERY different from my daily underwear. I think it's value will only grow with time (for me, not for my children as they will progress with their drawing skills and for them it will feel that I'm wearing their outdated drawings)	Tough question. I don't know would I do with it when it wears down, but I would definitely not just throw it away
I sleep in it (every other week, when it is not in the laundry)	I do not value particularly highly my other underwear, I have a very utilitarian attitude towards my underwear in general. These boxers are clearly very-very special!	absolutely not, even if I no longer wear it in the future (because it has a hole or something), I would definitely keep it
2-3 times a week	Yes	No

**Table 14.** Survey with questionnaire for male research participants sent and filled through December, 2016.

## 2.4 SCARFS

What was your first expression from the scarfs?	How do you like the print de-sign?	How do you like the colour and print qual-ity?	How do you like the size?	How do you like the fab-ric?	How do you like the sew-ing qual-ity?	Please, elaborate your choices and share your feedback on design, size, quality. (what are your concerns or likes, what would you prefer to change, do you like the label, bag and any other thoughts you would like to share)
Pure delight! The most beautiful scarves, and I think it was the first time we received the ready pattern in real life. Big scarf was right away tried as Sophie's dress	5	5	5	5	5	Adult scarf is perfect – everything is just right. However, the small child one we couldn't figure out how to wear it properly, it is too short to wear it on the neck. As a result, Sophie wears it sometimes as a hair band or as a bow on her ponytail.
Oh wow!	5	5	4	4	5	The size of the smaller scarf wasn't too comfortable for myself, it is too narrow and light-weighted. Or may be I didn't understand how to wear it. However, the big scarf is great with the same fabric.

**Table 15.** Assesment of scarfs' qualities for female research participants sent and filled through December, 2016.

### **Do you value this scarf more than any others because your child co-created it or any other reasons? How do you think its value change with time? Explain please**

- Oh yes, it is an object of great honour. My daughter and I told everyone about these scarfs and dresses. Then everyone wanted to see the result and of course, we showed and showed it to everyone. It's a true honour. Overall, there is duality in emotions and perception: on one side, it is an honour that the Sophie's drawing was used for these items, on the other side, I really like the print pattern itself, even if this pattern was made by someone else. Those scarfs we will of course keep forever in the family.
- For me, it is very pleasant and important object, because my children drew the original artwork. It is more important than active use of these items



And again, because of the co-creation nature of the objects, the users expressed strong emotional attachment towards it and have intention to save it for future.

## 2.5 Toys

In January 2015, all participants received as holiday presents from the project – toys that were made from their drawings, that were filled with textile waste from cutting stage for prototypes and men's underwear. In addition, they got a calendar for the upcoming year designed with their drawings. At the end of 2016, they were sent surveys to assess the quality of received objects and share their opinion on it's current life in the family and their thoughts on their future.

Mom's reaction: "They are outstanding and very warm. They give you a feeling of meaningfulness and of course, we never had toys with our child's drawing. I very like the material, it is very high quality, after all this time the colors didn't fade."

Daughter reaction: "Sofia finds it fascinating - she still can't understand how her drawing appeared onto the toys. She loves them truly, and she also can see the difference in meaning of buying toys from supermarket and those handmade." (Iliia Nikitina, 24 December 2016)

Another mom's reaction:

*"Obviously i love it! going to keep it for my grandchildren, she loves it too. Though she doesn't play with any soft toys, but she keeps this one on her desk."*

(Elisa Mirliton, 21 October 2016)

All the participants rated the quality of print, the overall quality of a toy and its size with highest mark on every category (5 out of 5). Although one child has been reported to play with the toy often – the youngest participant, Kira (at the age of 4 years old), others expressed love towards the toys and keep them either on their desks or in the playroom as a memory or statement.

Mother of Sofia wrote: "Sofia doesn't "play" specifically with the Varvara's design toys, but they are something more for her. Most of the time she plays Ponies and there she creates scenarios. Varvara's toys are more as a part of her daily routine and the way to express herself and her emotions (specifically the hearts). The squirrel always takes place on her table. Today we are decorating our space and she wants to put all her toys on the Christmas tree." (Iliia Nikitina, 24 December 2016)

Other family as well reported that they decorated the Christmas tree with the toys and now keep it together with Christmas decoration. (Albina Klimenko, 20 October 2016)

In terms of the value of the toys, one mother wrote:

"I specifically value those toys MORE than any other toy Sofia has. It is both for me - the drawing my child made, the heart symbol, and that is handmade, it's not like a pony from cartoon or troll - this is something that truly linked to my child, and I am going to keep these toys forever. It is a big memory for me which I want to keep through my whole life. I will never through these toys away. It is impossible even to imagine this. (Iliia Nikitina, 24 December 2016)

Others as well expressed similar feelings that they will never throw it away. it's part of their family heritage now. (Elisa Mirliton, 21 October 2016)

What do you think will happen with the toy in the future?

- “I think they will become our Christmas tree decorations, every year will take them out of the box and discuss that Lia drew it!”
- “It’ll have a long life, we’ll keep it on display. and then hopefully the grandchildren will receive them as a present.”
- “We will keep it.”
- “It will stay in a family as a memory”
- “They will stay with us forever”

Participants were asked if they think that the fact this toy is filled with fabric waste from the clothing production adds the value to the toy, or it doesn’t matter for them, or maybe they didn’t like it.

Nikitina replied: “I find this very thoughtful that the toys are filled with fabric waste. This is consciousness which I can also explain to my child.” (24 December 2016.) Other participants replied similarly that it is a nice bonus and overall adds value to the toy. Mirliton noted: for me it’s important, i do believe that we all have to be more conscious. And this toy represents this idea of zero waste production, ethical production. What I think the most genius about this toy is that it became a good reason to discuss it all with my child” (21 October 2016).

Next, I asked to access the filling of the toys and if the participants noticed any difference with regular toys, everyone reported that the filling feels harder than usual toys, but “Yes, toys have different fillings and this is amazing. I myself like one heart with uneven filling when you can touch the texture.” (Iliia Nikitina, 24 December 2016)

Another participant reported, that the knowledge that this filling is ecologically responsible makes her appreciate these toys more than usual toys, these ones are more “raw” and handmade. (Albina Klimenko 20 October 2016)



**i210.** Personal memory: “When we had an argument all together, Sofia found 3 hearts in her room and brought it to us - one for each. So we all stop arguing. She expresses a lot of her emotions with the heart - draw it in the air, on the paper, showing with the hands, broken heart too when she is upset, black broken heart when angry. So these toys with HER own heart on it is a part of her daily life.” (Iliia Nikitina, 21 December 2016)

## 2.6 OVERALL

Additionally to the interviews and surveys, all mothers shared the photos of their garments and objects through their social media platforms with positive feedback in captions, although they were not asked to do so.



It is important also to consider the fact, that mothers sent mostly drawings made without any direction, a sign that this would be preferable way to collaborate with families, as not many parents nowadays do have time for the drawing activities with their children, following directions from the clothing brand, and it would be the responsibility of the designer to come up with the suitable idea for each drawing sent.

Overall, I do see that all design decisions were good except zero waste square cuts. It either needs more design thought put into it; or a better option could be a traditional cut with the toy printed at the same yield and filled with the dress/skirt leftovers. In the latter case, there would be less time spent for prototyping and figuring out the cut to implement whole yield of the fabric, and more options of outfits would be available to choose from; meanwhile, the production will be still zero waste. However, it can be seen that even the garments that didn't fit well still pleased their owners and became part of the family history, today and in the future. I especially value the fact that some participants reported that zero waste production made them think about current condition of fashion industry and discuss it with their children.

To conclude, the fact that there was no one who reported that the co-created item is not valuable, and everyone shared the desire to save the garments even after they stop wearing it, either as a memento or for future generations, gives the project and me hope that these garments and objects won't become a part of post-consumer waste during the lifetime of one family.



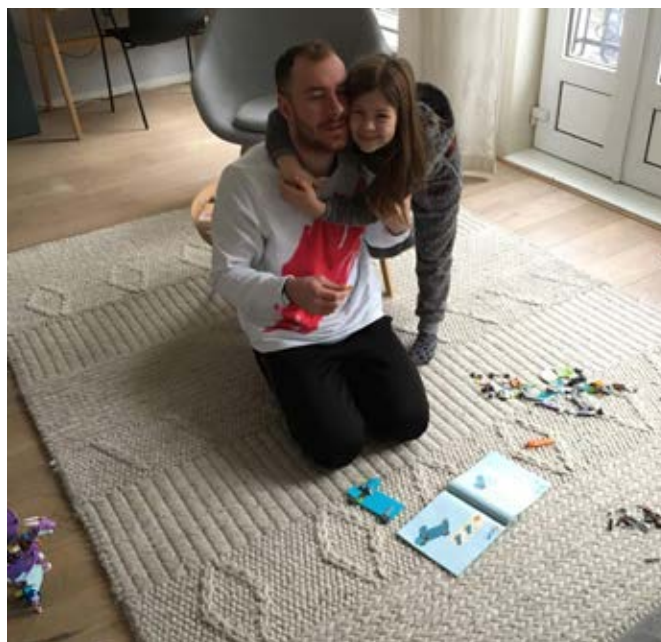
Personal story by Nikitina Iuliia:

"All these 3 pieces are very meaningful to me. It is this balance when I kind of not put too much attention into what I wear and at the same time it is a connection with my child. Also, I am very proud to be part of this project and feel connection with my friend Varvara- designer of this project. There was a period of hard times in our family and it might sound silly but I felt some support and warmth while wearing my white sweatshirt with the heart. It always reminds me of that amount of love I have towards my family and towards my child. Can't really remember "stories" - something special, but in some way once I received these items - they are always here with me. I am proud when people on the street say they like my skirt - there is a warm feeling when I answer: " yes, this is my child't drawing on it". Sweatshirt always attract a lot of attention. Some friends know that this is "Sofia's heart" so they often comment how cool it is. I like this. I like to wear also these pieces while at home - it brings me that feeling of coziness, the feeling of family and connection with each other."

(24 December 2016.)



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## CHAPTER 4

# WHAT'S NEXT

This project tested minimum valuable product of possible business model for fashion brand: the first prototypes were developed through it and production methods were tested. The first prototypes were sent to its first user to gain feedback. However, this is one step of many, and lessons should be learned from this experience and become a basis for future development. Further, I will share my thoughts briefly on how this project might be improved or developed further.



# 1 POSSIBLE DEVELOPMENT

## 1.1 PRODUCTION CHAIN

First prototypes were produced in one city where designer was located, printed by local printing company, and cut and assembled in a home-based studio, then it was sent to the co-creator. Although this may be one of example of ethical local production, there are other ways of production, if there is an intention to scale the brand. The first option, would be to use existing production locations in the country/city of the co-author. Nowadays, there are plenty of digital printing studios around the world, and even more sewing studios. These studios could be reached out to for collaboration, moving the production to the country of origin of the customer. However, at the present moment, this working model may meet difficulties in terms of different qualities of the production locations, and fabric they source for printing varies too. But this is a possible suggestion for development. Another road to go, would be to suggest an option for ordering the fabric with printed co-created repeated pattern, and then homemakers could sew it themselves, using instructions from Ready-to-paint. A third option is to collaborate with existing mass-customization platforms and produce zero waste garments through their production streams. For all the suggested variants, Ready-to-paint would need only an in-house designer and one location of business and design studio. However, even design work might be outsourced to the worldwide textile and fashion design community.

## 1.2 TECHNOLOGY

The implementation of digital technologies could ease the workflow of the working process. First of all, when all the textile patterns are made digitally and pattern cuts are digitalized, then these design processes can be done remotely and sent to the printing company in any part of the world.

Moreover, certain phases of the zero waste fashion design process can become easier and faster with the help of digital technologies, such as computer-aided design (CAD)" (Rissanen and McQuillan, 2016: 128). Rissanen and McQuillan emphasize that using digital means to develop and resolve a zero waste garment can solve a number of challenges: it is an obvious solution to the large scale patterns that zero waste fashion design may produce; advantages also include the easy integration of other digital methods into the design process, such as digital print design, and the portability of a digital file, either for personal use or to send digitally anywhere. (Rissanen & McQuillan, 2016: 130)

This thesis design practice implemented Adobe Illustrator as a digital cut making design tool, simply because such CAD systems with pattern cutting and marker-making capability, including Gerber, Lectra, OptiTex, and StyleCAD, were not available to me at the time of production.

"A key advantage of digital pattern cutting in fashion design (whether zero waste or not) is the ease of combining it with other digital technologies, such as laser cutting, digital textile print, and digital embroidery. Laser cutting zero waste patterns allows for accurate cutting of pieces where each cut has two sides...Digital textile printing allows the application of the garment pieces and textile pattern onto the fabric surface simultaneously." (Rissanen & McQuillan, 2016: 141)

The fellow designer Lumsden, noted that the advantages of CAD—“the speed, accuracy, tidy containment of digital storage” (in Risanen & McQuillan, 2016: 146), and I absolutely agree, and think that this direction would be unavoidable for Ready-to-paint’s future development.

Besides, the development of a digital interface to create patterns and drawings digitally would make this project more contemporary. Collaboration with new media departments could be a way for developing, for instance, a kinect prototype that would allow children and adults to draw in the air, and these drawings will be further shown on the digital wall, and furthermore shown on the 3d model of the garment.

To sum up, this project will definitely benefit from implementing digital technologies on multiple levels.

## **2 FUTURE COLLABORATIONS**

The scope of this thesis was to test collaboration with children only; however, other possibilities exist nowadays. Basically, a co-author may be anyone who is able to draw. First, of course it can be adult artists, their art can become print pattern for the zero waste garments; consequently, their fans who buy this clothes may develop emotional attachment towards these garments, because they appreciate the art of particular artist. Then, parents can create visuals for their own clothes through series of workshop, for instance. Single adults or couples can as well become co-creators for their own clothes, and as well as for each other. But I do insist that the role of the designer is still significant on these occasions.

### **2.1 SCHOOLS AND OTHER INSTITUTIONS**

Collaboration with schools, kindergartens and art studios can be another way for collaborative work on this project. In this, educational institutions children are producing enormous amounts of artworks that are usually brought home in a paper format and saved by parents or thrown away with time. Those artworks could be transformed into patterns and be available for parents to order on suggested items with their children’s art.

### **2.2 OTHER BRANDS**

Collaboration with other fashion brands can become one of the ways for the development of the Ready-to-paint project. In this collaboration, Ready-to-paint would take a role of design agency, organizing all the tasks regarding children’s artworks and transforming these into commercial patterns. For instance, Ready-to-paint could develop a collection of the print patterns made from Finnish children drawings that will fit the style of Marimekko—although Marimekko operates with rotary printing technology, therefore the production model should be adjusted. The developed patterns would be going into mass production, rather than single customized production. Similarly, collaboration with other fashion brands would require only experience, skills and knowledge of the Ready-to-paint design team to create commercial patterns with children’s drawings for the upcoming collections. Moreover, Ready-to-paint could consult brands in terms of empathy design, and zero waste production in the scope of the brand production chain.

Another stream of collaboration activity could be based on the pattern cuts. Brands with good reputation could provide some of their pattern cuts that can be further used for printing with co-created print patterns. Therefore, the customer can choose his favourite brand's fit for the model and order it with his own pattern.

These ideas will definitely need more thought and testing put towards them further in the future.

## **2.4 MUSEUMS**

A collaboration with contemporary museums can become a key for the development of the Ready-to-paint project and benefit museums in return. As was discussed in the chapter about Public Involvement trends, especially in museums, nowadays museums are actively inviting visitors to participate in different kind of workshop or hands-on experience; contemporary installations suggest viewers play an active participatory role, and new media digital art installations are often available for visitors to try and play with it. Interactive drawing through use of different medias is one such installation. For instance, the already mentioned Immersion Room at Cooper-Hewitt Museum, where users are invited to try the digital pattern creation tool and their repeated patterns are projected at full-scale, floor-to-ceiling on the surrounding walls (Cooper Hewitt, Immersion Room, 2017). The Ready-to-paint project could suggest further development of this idea. If, for instance, there was an available collection of basic zero waste garments that people could try on, and project their patterns onto, and immediately order the co-created garment with their own design. In theory, this could be one more profit stream for the museum and a great platform for distribution of Ready-to-paint. Visitors would be given a unique option of getting souvenir or a garment with their own design, with memories of their visit to the museum embedded in the garment.

Moreover, such a digital interactive platform could be adjusted to the needs of the project in collaboration with one of the many new media companies that are existing nowadays; for instance, the already mentioned DigitalArti with their interactive drawing installation, Hoplite (Hoplite, Interactive Light Drawing, 2017).

Visitors to any museums who will host a Ready-to-paint project will be able to create digital artworks using flashlights, light sticks and laser pointers as "brushes", or even their hands as "brushes". Then this artwork could be projected on the 3d model of garments, adjusted, designed to the final stage, and ordered by visitors. Ready-to-paint would produce those garments, in of the ways discussed in this chapter, and send it to its co-author.

It seems that every museum today has a shop with souvenirs; often there are scarfs or textile products with famous artists reproductions, or with the artworks of the current featured artist. Along with those souvenirs, museums can provide an option of making co-created garments and souvenirs, that will be embodied with the personal stories and experiences of the user.

Similarly, there are many kinds of hand-on workshops at almost any museum nowadays, that invite visitors to participate, create and try different technologies and painting techniques. The outcomes created through this experience can be further used to make meaningful products for participants and keep the memories of their visit to the museum.

Such collaboration can connect the creative process of a visitor with a fashion production line in order to benefit all participants: fashion, museums (as a transition platform), and most importantly, the end-user; providing the first with a sustainable methodology; the second, with new marketing streams; and the visitor, with a meaningful experience and long-lasting souvenirs.



### 3 EVALUATION

The initial goal of this thesis was to test the hypothesis of one working model for the fashion industry or for one brand that can be an example of a sustainable approach in making clothes. The model in which clothes will be co-created with children's drawings and be meaningful for its users – parents and children, therefore sustain longer in the family. I have especially concentrated on children's art, because I had a preliminary assumption that nowadays contemporary art and art that is part of fashion trends are relatively close to children's art visually, and that this trend will benefit the development of my theory. Moreover, children are the next generation whose needs we are trying to meet while speaking of sustainable practices. In my view, the sooner we start educate children with positive examples and experiences, the brighter their future is.

In terms of goals for this thesis, I think I did achieve them. Even though, the initial scope of the thesis was much larger and many aspects were eliminated through the production stage; additionally, my choices were often limited by time and money resources, location, and existing available options, so I often felt that I could be doing better and more in terms of scope of the work, if only I have better equipment, more working time and so on. Still, at the final stage of this thesis, I think that the scope was large and I made huge amount of work.

Eleven children's dresses and skirts; seven adult dresses and skirts; four sets of scarfs; three pairs of men's underwear and many children toys were made during this thesis, all are co-created with children's drawings and sent to the authors and their families. All were made with no textile waste left from the production, different methods of achieving zero waste goals were tested. All were made with labels that inform users about uniqueness of

each piece of clothing they received, providing information on amount of waste left over from the production, about the people who made their clothes, and the unique number for each item that can be used later for an online archive, providing an opportunity to add more updated information to the history of the garment. Several surveys and interviews held during the thesis reported high level of satisfaction from the received garments and the intention to cherish these garments and save them, no matter its condition, in the future. Although this work tested and observed only one year-long period of active life of the garments, the survey and interviews showed that these co-created clothes have a potential to be valuable for their users throughout their lifetime and stay in the family for use by next generations.

I do feel that I made valuable products with no, or less, harm to the environment; and the new owners of clothes are informed about that, and the value that is embedded in their clothes too, in addition to their own contribution to the clothes they received. The realization that the clothes I produced are currently loved by seven families, and they were co-created with the art of their children makes me happy as a human and as a designer. My design choices and actions brought smiles to the faces of parents and children and made them wonder. The dresses and other garments designed and produced lived a summer full of adventures with their owners and, hopefully, many other shared memories are ahead of them.

In terms of theoretical work, I undertook extensive research about social trends and changes in perception of children's art and overall public involvement, along with related practices and theories of empathic design, that this work is part of. This research formed a stable theoretical background for the design work produced. It also made me more confident in the direction I was intuitively heading in my design practice.

During the timeline of this thesis I created a social media platform that followed some parts of the research and production processes. Surprisingly, it found support from people with different backgrounds and of different interests. Relatively many expressed interest and wrote positive feedback about the produced garments; over 20 followers said they are ready to order co-created garments, either for themselves, their daughters, or in new styles for their sons and husbands. Therefore, most likely this project will continue becoming the Ready-to-paint brand and to produce more Zero waste co-created garments, simultaneously educating its supporters and users about the values of sustainable fashion production. Hopefully, the project finds the resources for future development and interesting collaborations.

To conclude, the goals of the thesis seem to be achieved, and in some respects, it may have been overachieved, even though I didn't feel this during the whole process of applied research. I only felt so, after describing the work.

## 4 REFLECTION

The main lesson I learned through the timeline of the thesis is that there are endless roads to go down towards the goal of sustainable fashion, as well as there is an endless amount of problems the contemporary fashion industry is facing. Therefore, I as a fashion practitioner, may never be satisfied with my work if I evaluate it through the lens of sustainability, but this doesn't mean I should stop doing it. On the contrary, it means I should continue to evaluate my work constantly and find more ways for finding a holistic approach in reaching this goal.

For the scope of this thesis, I chose to follow the road of empathic design practices, and include my customer, user in creation process, in order to make clothes with them. Clothes that will be valuable and produced with quality, creativity and no textile waste, such clothes that will educate them by existing in their wardrobe.

The choice to work with group of participants was beneficial and challenging, simultaneously. It constantly inspired me to be better in my design practice; moreover, no pattern prints would be created, if there were no children participants. On the other hand, the process of working with children and mothers is time-consuming, as they have their own busy lives and cannot respond right away. In addition, the location of all the participants and myself became a money issue, because of the mail/post expenses involved in the transportation of the ready garments. But all the cons of the collaborative work with participants are inferior to the advantages and the level of satisfaction and inspiration that were gained through the working process, and following the observations of children and their parents. This co-creation process of work let me experience children's creativity up close and get inspired by it in my design work. Moreover, to observe how created garments were received by their co-authors and new owners, how they



were worn during important events or summer days, to receive positive feedback expressing gratitude and love towards the produced garments, this was a biggest reward for the designer and researcher, for me, and is the biggest inspiration to continue with this practice, to find sustainable solutions that bring same amount of joy and love towards the clothes I make.

What I struggled with the most, is the desire to do better and include more ideas that came into my head through the production of this thesis. I often thought that if I would be located in Helsinki during the production of this thesis, I would collaborate with a new media department and with an architect, so we could create a working prototype of an interactive space where children could paint digitally and their drawing would be transformed into patterns on the dress right in this space in front of their eyes. With time, I realized, that before this becomes possible, the testing of production process in fashion industry have to be made, and that my thesis is focusing exactly on this problem. Narrowing down the focus towards the work with children, the roles of the designer and participant and testing the production processes that are involved in making the ready garment, this helped me to stay focused and complete this work.

The advice I would have given myself at the beginning of the work, is to write the main objectives of the production simultaneously with the production process, not after. In my case, I preferred not to spend time on writing during the production and did that afterwards. This decision saved time and let me focus on the design and production part, but it made writing more challenging.

Moreover, I do realize that this work could be done in less amount of time, than it did; but I also know that this work was done with two children, a husband and social life on my hands, and that balance is the key for happy life and good work, so I try not to be

hard on myself, and appreciate the fact that I managed to be a loving mother and wife, and hopefully a good friend, during the production of this thesis, with no harm done to the quality of the produced work.



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**i82** Liza Itskhoki, 2014, *Various drawings*, digital images of drawings, Itskhoki family archive, sent by Albina Itskhoki.

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**i115** Varvara Zhemchuzhnikova and Lia Klimenko, 2015, *Pattern Summer Night*, digital image, Varvara Zhemchuzhnikova archive.

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**i137** Varvara Zhemchuzhnikova and Sophie Mirliton, 2015, *Pattern Abstract*, digital image, Varvara Zhemchuzhnikova archive.

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**i211** Elena Kovyrzina, 2016, *Family time*, photography, Elena Kovyrzina Instagram account, <<https://www.instagram.com/elenakovyrzina>>

**ii212, 213** Iuliia Nikitina, 2016, *Family photos*, photography, Nikitina personal archive, sent by author.

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